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INSTALLATION RESTORATION PROGRAM

INFORMAL TECHNICAL INFORMATION REPORT FOR UNDERGROUND STORAGE TANK SITES

EGLIN AIR FORCE BASE FLORIDA

ENGINEERING-SCIENCE ATLANTA, GEORGIA

APRIL 1992

PREPARED FOR

HEADQUARTERS AIR FORCE SYSTEMS COMMAND COMMAND CIVIL ENGINEER (HQS AFSC/DEV) ANDREWS AIR FORCE BASE, MARYLAND 20334-5000

UNITED STATES AIR FORCE
AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE (AFCEE)
ENVIRONMENTAL RESTORATION DIVISION (ESR)
BROOKS AIR FORCE BASE, TEXAS 78235-5000





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INSTALLATION RESTORATION PROGRAM

INFORMAL TECHNICAL INFORMATION REPORT FOR UNDERGROUND STORAGE TANK SITES

AIR FORCE SYSTEMS COMMAND EGLIN AIR FORCE BASE, FLORIDA

APRIL 10, 1992

PREPARED BY

ENGINEERING-SCIENCE, INC. 57 EXECUTIVE PARK SOUTH, N.E. SUITE 590 ATLANTA, GEORGIA 30329

USAF CONTRACT NO. F33615-90-D-4014, DELIVERY ORDER NO.4
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ENVIRONMENTAL RESTORATION DIVISION (ESR)
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AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE (AFCEE)
ENVIRONMENTAL RESTORATION DIVISION (ESR)
BROOKS AIR FORCE BASE, TEXAS 78235-5000

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PREFACE

This Informal Technical Information Report presents the analytical results and pertinent data associated with the Underground Storage Tank Sites at Eglin AFB, Florida.

Engineering-Science, Inc., Atlanta, Georgia is contractor for this work. Mr. Ola A. Awosika, P.G., will be the primary responsible scientist performing the work.

The ITIR commences on December 1, 1991 and continues through April 10, 1992.

2nd Lt. Rodney Hamel, United States Air Force AFCEE/ESR, Brooks AFB, Texas is the Technical Program Manager.

Lew Bab Birou 1

Approved:

Contract Program Manager

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EGLIN AFB UST ITIR

1.0 INTRODUCTION

Engineering-Science (ES) has prepared this letter report to present the results of the environmental sampling work conducted at eight (8) Underground Storage Tank (UST) sites at Eglin AFB, Florida. The locations of these UST sites are depicted in Figures 1 through 8. The results of this investigation are contained in this report and are organized as follows:

- Background
- Sampling Effort
- Analytical Results
- Validated Data
- Recommendation

2.0 BACKGROUND

In 1989, CH2MHill was contracted to compile a comprehensive list of old and inactive USTs at Eglin AFB. In 1990/1991, EA Engineering, Science, and Technology, Inc. were chosen to perform a removal and disposal effort in conjunction with remediation of contaminated soils as necessary. During the course of EA's removal actions, ten UST sites required some degree of soil remediation in accordance with the Federal Department of Environmental Regulation (FDER) criteria. Soil pile bioremediation methods were implemented at an offsite location in six of these cases where OVA readings exceeded 500 ppm or more (Figure 1). Local soils from a borrow pit were used to backfill the holes. The four other sites displayed OVA readings between 80 and 140 ppm during excavation. Soils for these sites were allowed to aerate naturally onsite and were reused as backfill when the OVA readings had diminished. Information pertinent to the tank removal and soil remediation efforts are summarized in Table 1.

The objective of the current investigation at the UST sites is to comply with FDER assessment requirements by determining if contamination is present in the groundwater and to quantify the extent of the contamination if identified. This objective was accomplished through drilling of soil borings, installation of monitoring wells, collection of groundwater samples for chemical analyses, validation of analytical results, and the interpretation and analysis of the validated data.

3.0 GROUNDWATER INVESTIGATION AND RESULTS

3.1 Field Effort

This investigation effort was originally intended for the ten sites requiring remediation as discussed above. However, at the request of the Base, two sites (near Building 501 at Eglin Main and 90219 at Hurlburt Field) were deleted from this investigation due to the presence of monitoring wells onsite from previous groundwater investigations. The field effort at each individual UST site consisted of drilling, installation, development, and sampling of one monitoring well for physical and chemical analyses. The specific location of each well was selected in the field. An attempt was made to locate each well either within the previously excavated area or a nearby downgradient location, depending on site conditions (for example, presence of overhead power lines, communication lines, and trees). An estimate of the flow direction at each site was made based on surrounding topography, proximity of nearby streams, and professional judgment. Boreholes were made to Soil samples were then collected for evaluation of accommodate each well. lithological attributes and any physical evidence of contamination. Organic vapors readings were taken with an HNu during the drilling effort. Drilling records and other information pertinent to the drilling effort are presented in Appendix A. None of the wells installed were surveyed since a potentiometric map for each site could not be developed using data from only one well.

The field work was conducted on February 3 through February 13, 1992 and on February 19 through February 21, 1992. Eight groundwater samples were collected for chemical analysis. All samples were sent to Southwest Laboratory for analyses. The analyses requested included total petroleum hydrocarbons, polynuclear aromatic hydrocarbons, 1,2-dichloroethane, ethylene dibromide, lead, BTEX, and MTBE as required by FDER.

3.2 Analytical Results

A summary of the analytical results are presented in Tables 2 through 7. Tables 3 through 6 are in accordance with reporting requirements in the IRP Handbook.

Ethylene dibromide and 1,2-dichloroethane were not detected in groundwater samples collected from any of the UST sites. Total petroleum hydrocarbons were reported in samples from MW981-1 and MW9990-1 at levels 600 μ g/L and 1600 μ g/L, respectively. No polynuclear aromatic hydrocarbons, with the exception of fluoranthene in MW3021-1 at 2.0 μ g/L, were identified in groundwater samples. Lead in a sample from MW792-1 at a concentration of 142 μ g/L exceeded the Florida MCL of 50 μ g/L. A low concentration of toluene was reported in the MW3021-1 sample from the BTEX analyses but the second column run did not provide confirmation. All eight samples were free of detectable MTBE contamination. A copy of the original raw data forms provided by the laboratory are included in Appendix B.

3.3 Validated Data

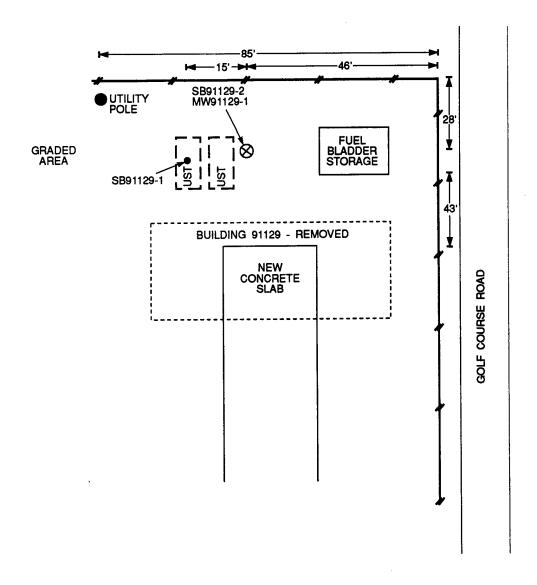
The analytical data, preceded by a comprehensive review of quality assurance and quality control (QA/QC) qualifiers, is presented in Appendix B.

The lead results from the MW4204 sample and the matrix spike are considered estimated due to a low percent recovery. Xylenes at a concentration of $0.7 \mu g/L$ were detected in the equipment rinsate UST-ER2 but were not confirmed due to the absence of a second column analyses. With the exception of the sample from MW9990-1, all polynuclear aromatic hydrocarbon analyses exceeded the established holding time criteria for sample extraction. Therefore, these results are estimated at the laboratory method detection limits.

3.4 Recommendation

Based on the sampling results, a second groundwater sample should be collected from MW792-1 to verify the presence of lead contamination. The remaining seven sites did not show sufficient evidence of groundwater contamination attributable to the USTs to warrant further characterization. Therefore, no further investigations are recommended for these sites.

UST SITE BUILDING 91129 - HURLBURT FIELD EGLIN AFB, FLORIDA





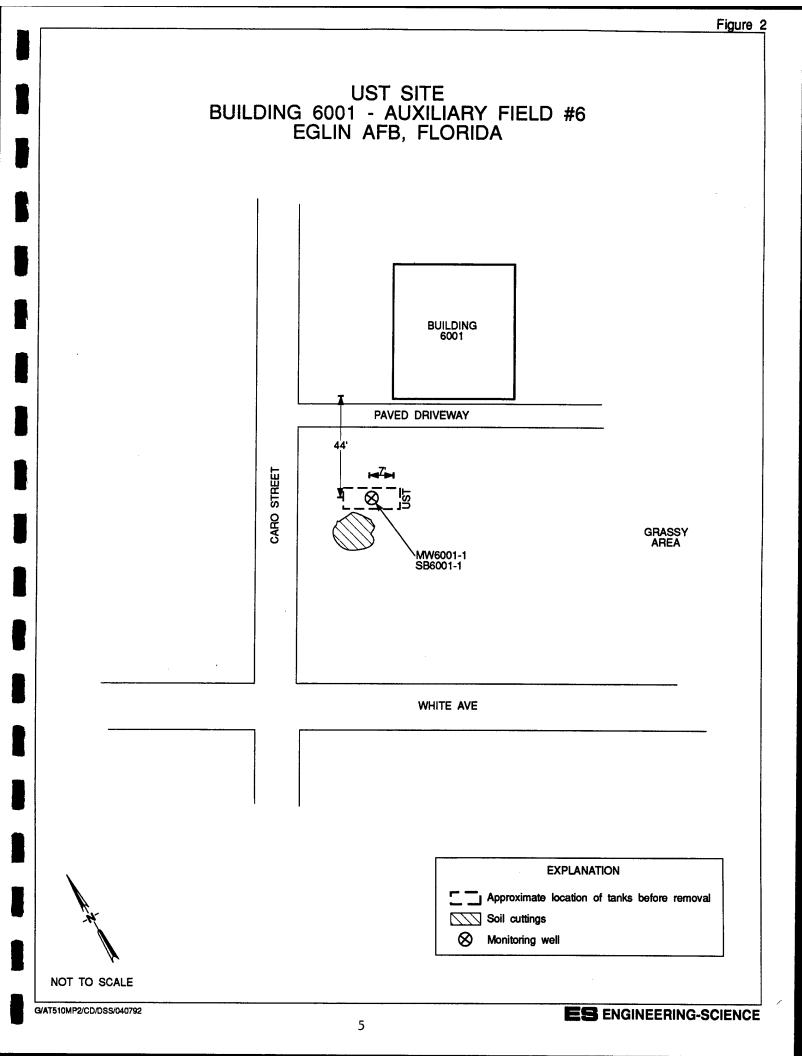
EXPLANATION

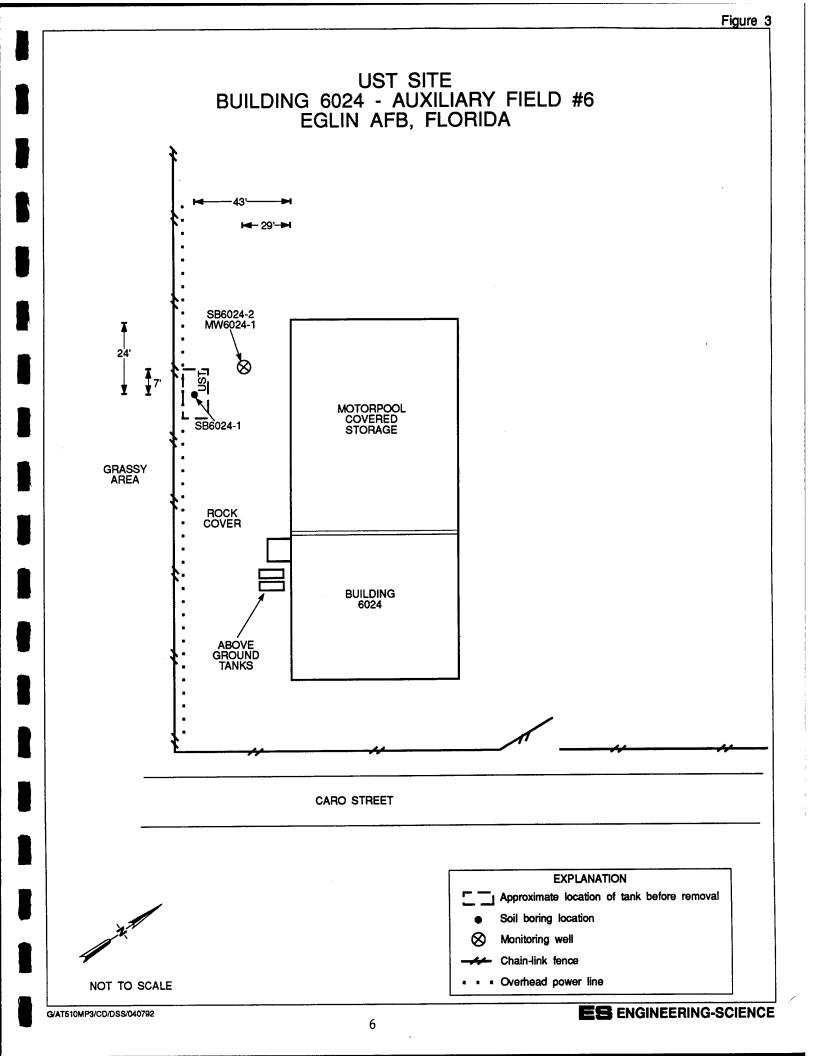
Approximate location of tanks before removal

Chain-link fence

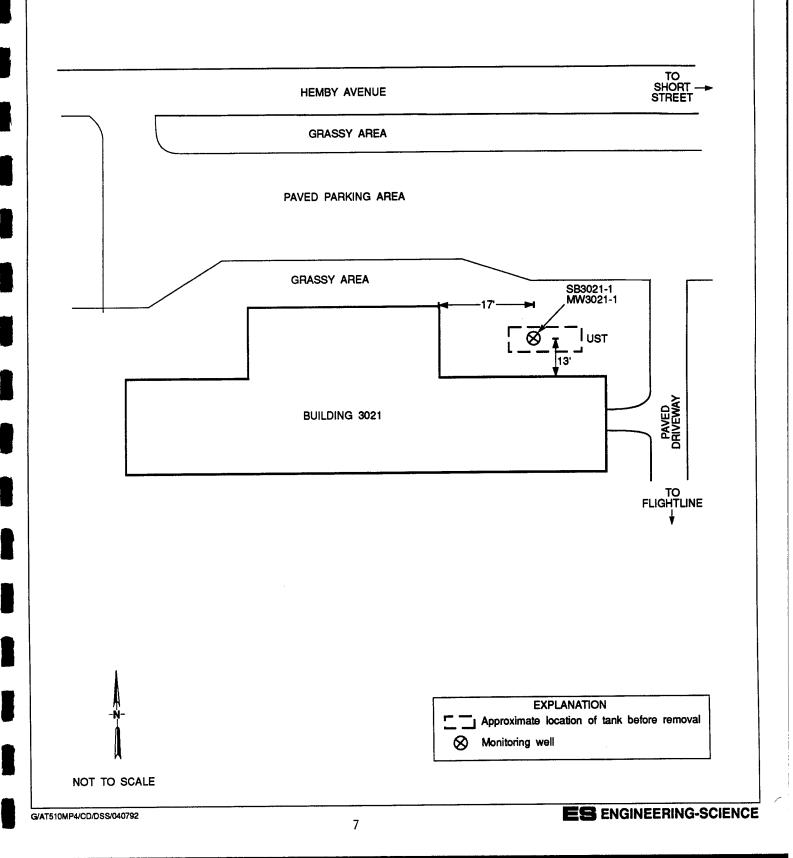
Monitoring well

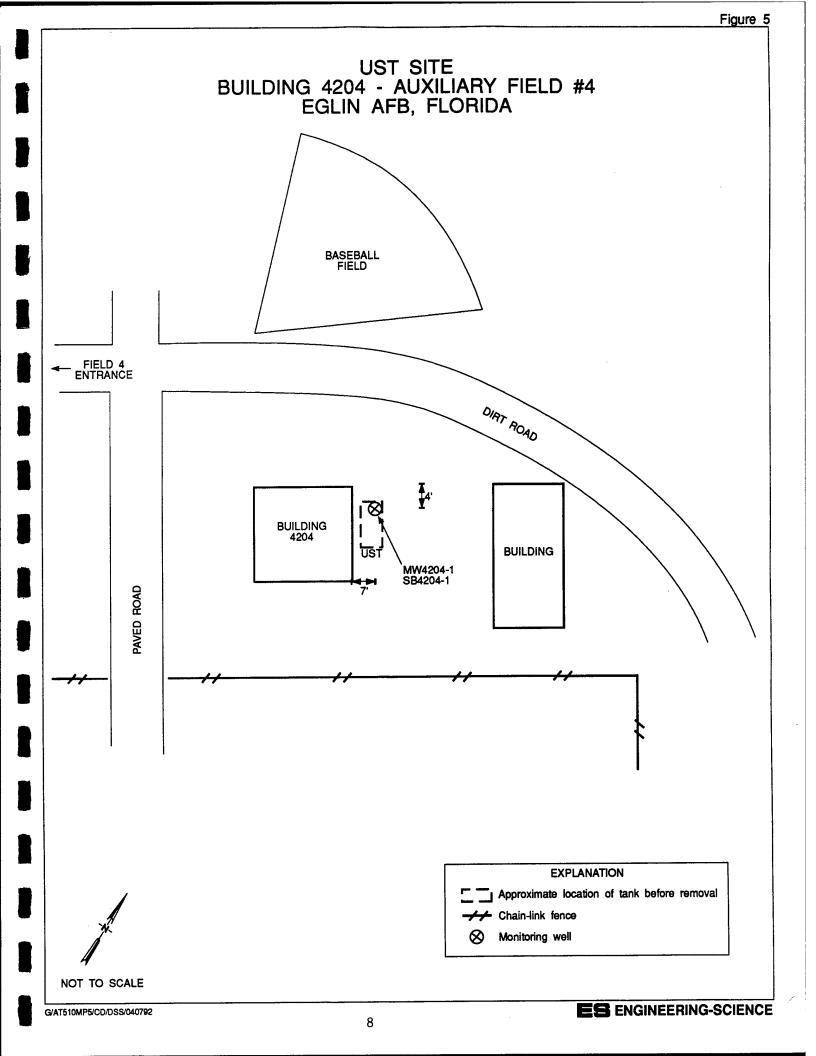
Soil boring location



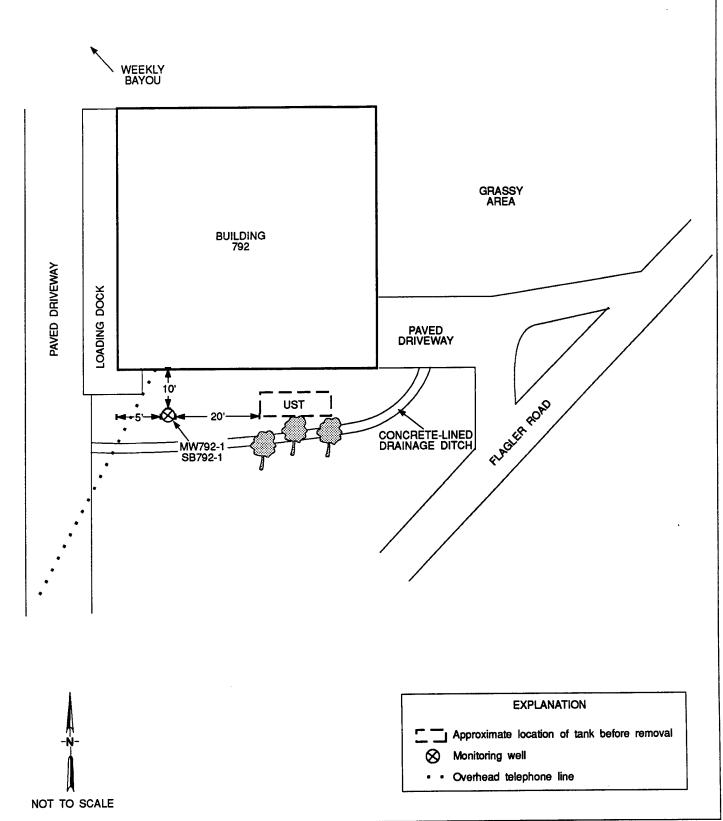


UST SITE BUILDING 3021 - AUXILIARY FIELD #3 (Duke) EGLIN AFB, FLORIDA

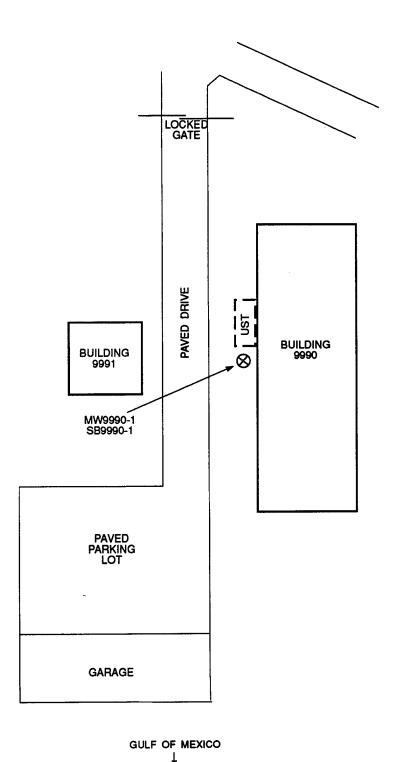




UST SITE BUILDING 792 - EGLIN MAIN FIELD EGLIN AFB, FLORIDA



UST SITE BUILDING 9990 - D3 COAST GUARD FACILITY EGLIN AFB, FLORIDA



EXPLANATION

Approximate location of tank before removal

Monitoring well

NOT TO SCALE

G/AT510MP8/CD/DSS/040892

ES ENGINEERING-SCIENCE

TABLE 1 UNDERGROUND STORAGE TANK REMOVAL DATA EGLIN AFB

UST Number	Size (gallons)	Storage Use	Maximum OVA Reading during Excavation (ppm)	Maximum OVA Reading during Well Installation (ppm)
91129-2	10,000	Diesel	104	200
6001	1,000	Diesel	1000+	220
6024	500	Diesel	1000+	600
3021	500	Diesel	80	500
4204	55	Gasoline	1000+	280
792	1,000	Diesel	1000+	34
981-2	5,000	Diesel	1000+	600
9990	1,000	Diesel	82	0

TABLE 2
PHYSICAL PARAMETERS
AS MEASURED PRIOR TO SAMPLING
UST SITES
EGLIN AFB

Site Number	Well Number	рН	Conductivity umhos/cm	Temperature ° C	Sampling Date
91129	MW91129-1	8.63	850	16.2	92/2/19
6001	MW6001-1	8.95	200	21.9	92/2/19
6024	MW6024-1	7.73	30	21.8	92/2/19
3021	MW3021-1	7.83	30	18.2	92/2/20
4204	MW4204-1	8.16	60	20.7	92/2/19
792	MW792-1	9.30	230	17.0	92/2/20
981	MW981-1	9.10	170	20.4	92/2/20
9990	MW9990-1	8.85	460	15.8	92/2/21

ANALYTICAL RESULTS **EGLIN AFB UST SITTES** TABLE 3

					[Site]	usr	UST	UST
					Other Info	Water	Water	Water
			ARAR (1)	(E)	[Field #]	MW3021-1*	MW4204-1	MW4204-1 MSD (2)
Parameter	Method	Units	Federal	State	[Lab#]	8803.01	8794.06	8794.07
1,2-Dichloroethane	EPA 601	ng/L	5	ಣ		QN	ND	18.4
Ethylene Dibromide	EPA 504.1	ug/L	0.05	0.02		ND	ND	1.8
Petroleum Hydrocarbons	EPA 418.1	ug/L	•			QN	QX	28,000
pead	EPA 239.2	ug/L	•	50		ND	6.9 J	8.0 J
Benzene	EPA 602	ug/L	\$	1		QN	QN	10.1
Toluene	EPA 602	ng/L	1000	•		0.5 JN	QX	9.5
Ethylbenzene	EPA 602	ng/L	700	•		ND	QN	8.6
Xylenes	EPA 602	ng/L	10,000	,		ND	QN	30.4
MTBE	EPA 602	ug/L		,		ND	QN	42.4
Polynuclear Aromatic Hydrocarbons Fluoranthene	EPA 610	ng∕L	ı	ı		1.0 UJ 2.0 J	1.0 UJ 1.0 UJ	VARIES 11.5

(1) - Applicable or Relevant and Appropriate Requirements
(2) - Matrix spike or matrix spike duplicate
(3) - Duplicate of MW91129-1
J - Estimated value
N - Tentative identification
ND - Not detected

NA - Not analyzed

* - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis

UI - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) **EGLIN AFB UST SITES**

			ARAR (1)	(E	[Site] [Other Info]	UST Water MW4204-1 MS (2)	UST Water MW6001-1	UST Water MW6024-1
Parameter	Method	Units	Federal	State	[Lab#]	8794.08	8794.05	8794.04
1,2-Dichloroethane	EPA 601	J/gn	8	en		17.2	QN	QN
Ethylene Dibromide	EPA 504.1	J/gn	0.05	0.02		1.62	ND	QN
Petroleum Hydrocarbons	EPA 418.1	ng/L		•		25,000	QN	QN
15	EPA 239.2	J/Bn	,	50		16.5 J	QN	10.2
Benzene	EPA 602	J/Bn	ν,	-		6.9	QN	QN
Toluene	EPA 602	ug/L	1000	•		9.3	QN	QN
Ethylbenzene	EPA 602	J/gu	700			9.4	QN	QN
Xylenes	EPA 602	ug/L	10,000	•		29.4	QN QN	QN
MTBE	EPA 602	ug/L	ı			44.6	ND	QN
Polynuclear Aromatic Hydrocarbons	EPA 610	ug/L	•			VARIES	1.0 UJ	1.0 UJ

(1) - Applicable or Relevant and Appropriate Requirements
(2) - Matrix spike or matrix spike duplicate
(3) - Duplicate of MW91129-1
J - Estimated value
N - Tentative identification
ND - Not detected
NA - Not analyzed
UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) EGLIN AFB **UST SITES**

					[Site]	UST	UST	UST Water
			ARAR (1)	(1)	[Field #]	MW792-1	MW91129-1	MW91601-1 (3)
Parameter	Method	Units	Federal	State	[Lab#]	8803.04	8794.01	8794.02
1,2-Dichloroethane	EPA 601	ug/L	ν.	e		QN	QN	QN
Ethylene Dibromide	EPA 504.1	ug/L	0.05	0.02		QN	QN	QN
Petroleum Hydrocarbons	EPA 418.1	J/gn		,		QN	ND	QN
Lead	EPA 239.2	ng/L		20		142	26.6	21.4
Benzene	EPA 602	ng/L	٠,	1		QN	QN	QN
Toluene	EPA 602	ng/L	1000	1		QN	QN	QN
Ethylbenzene	EPA 602	ug/L	700	ı		QN	QN	QN
Xylenes	EPA 602	J/gn	10,000	ı		QN	QN	QN
MTBE	EPA 602	ug/L	•	•		QN	ND	QN
Polynuclear Aromatic Hydrocarbons	EPA 610	ug/L	1	•		1.0 UJ	1.0 UJ	1.0 UJ

Applicable or Relevant and Appropriate Requirements
 Matrix spike or matrix spike duplicate
 Duplicate of MW91129-1
 Estimated value

N - Tentative identification

ND - Not detected

NA - Not analyzed

UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) EGLIN AFB **UST SITTES**

					[Site] [Other Info]	UST Water	UST Water	UST Water
			ARAR (1)	(3)	[Field #]	MW981-1	MW9990-1	UST-ER1
Parameter	Method	Units	Federal	State	[Lab #]	8803.03	8819.01	8794.1
1,2-Dichloroethane	EPA 601	ng/L	٧n	m		QN	ND	QN
Ethylene Dibromide	EPA 504.1	ug/L	0.05	0.02		QN	QÑ	QN
Petroleum Hydrocarbons	EPA 418.1	ug/L	•	•		009	1600	Q.
read 17	EPA 239.2	ng/L	•	20		5.4	QN	QN
Benzene	EPA 602	ng/L	٧٠			QN	QN	QN
Toluene	EPA 602	ng/L	1000	1		QN	QN	QN
Ethylbenzene	EPA 602	ng/L	700	•		QN	QN	QN
Xylenes	EPA 602	J/gn	10,000	1		ON	ND	QN
MTBE	EPA 602	ug/L	ı	,		QN	QN	QN
Polynuclear Aromatic Hydrocarbons	EPA 610	ug/L	1	,		1.0 UJ	ND	1.0 UJ

(1) - Applicable or Relevant and Appropriate Requirements
(2) - Matrix spike or matrix spike duplicate
(3) - Duplicate of MW91129-1
J - Estimated value
N - Tentative identification
ND - Not detected
NA - Not analyzed
UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) **EGLIN AFB UST SITTES**

					[Site]	UST	UST
					[Other Info]	Water	Water
			ARAR (1)	(I)	[Field #]	UST-ER2	UST-TB1
Parameter	Method	Units	Federal	State	[Lab #]	8803.05	8794.03
1,2-Dichloroethane	EPA 601	ng/L	S	ю		QN	QN.
Ethylene Dibromide	EPA 504.1	J/gu	0.05	0.02		QN	QN
Petroleum Hydrocarbons	EPA 418.1	J/gn	•	•		QN	ND*
18	EPA 239.2	ug/L		20		QN	NA
Benzene	EPA 602	ug/L	٧			QN	QN
Toluene	EPA 602	ng/L	1000	•		QN	QN
Ethylbenzene	EPA 602	ng/L	700			QN	QN
Xylenes	EPA 602	ug/L	10,000	•		0.7 JN	QN ON
MTBE	EPA 602	ug/L	•			QN	QN
Polynuclear Aromatic Hydrocarbons	EPA 610	ng/L	•			1.0 UJ	NA

^{(1) -} Applicable or Relevant and Appropriate Requirements
(2) - Matrix spike or matrix spike duplicate
(3) - Duplicate of MW91129-1
* - Analysis performed but not requested
1 - Estimated value
N - Tentative identification
ND - Not detected
NA - Not analyzed
NA - Not analyzed
UI - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

ANALYTICAL RESULTS TABLE 3 (Cont'd) **EGLIN AFB UST SITES**

					[Site]	UST	LST
			2 4444		[Other Info]	Water	Water I'ST-TR3*
Parameter	Method	Units	AKAK (1) Federal	State	[Lab#]	8803.02	8819.02
1,2-Dichloroethane	EPA 601	ng/L	\$5	ю		QN	QN
Ethylene Dibromide	EPA 504.1	ug/L	0.05	0.02		QN	ND
Petroleum Hydrocarbons	EPA 418.1	J/gu	•	•		NA	٧N
pear 1'9	EPA 239.2	J/gu	•	50		NA	NA
Benzene	EPA 602	ug/L	۶,	-		N Q	Q
Toluene	EPA 602	ug/L	1000	•		QN	QN
Ethylbenzene	EPA 602	ng/L	700	,		QN	QN
Xylenes	EPA 602	ug/L	10,000	•		QN	ND
MTBE	EPA 602	ug/L		1		QN	ND
Polynucleär Aromatic Hydrocarbons	EPA 610	ug/L		1		NA	NA

Applicable or Relevant and Appropriate Requirements
 Matrix spike or matrix spike duplicate
 Duplicate of MW91 129-1
 Estimated value

N - Tentative identification
ND - Not detected
NA - Not analyzed
* - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis

SAMPLE IDENTIFICATION CROSS-REFERENCE **EGLIN AFB UST SITTES TABLE 4**

Sample Description	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Lab Batch ID	8803	8794	8794	8794	8794	8794	8803	8794	8794	8803	8819	8794	8803	8794	8803	8819
Laboratory ID	8803.01	8794.06	8794.07	8794.08	8794.05	8794.04	8803.04	8794.01	8794.02	8803.03	8819.01	8794.10	8803.05	8794.03	8803.02	8819.02
Field Batch ID	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field ID	MW3021-1 (3)	MW4204-1	MW4204-1 MSD (1)	MW4204-1 MS (2)	MW6001-1	MW6024-1	MW792-1	MW91129-1	MW91601-1 (5)	MW981-1	MW9990-1	UST-ER1	UST-ER2	UST-TB1	UST-TB2	UST-TB3 (4)
Site ID	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST	UST

^{(1) -} Matrix spike duplicate
(2) - Matrix spike
(3) - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
(4) - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
(5) - Duplicate of MW91129-1
NA - Not applicable
AT510/9231189/USTIDCRF.XI.S

SUMMARY OF EXTRACTION AND ANALYSIS DATES **EGLIN AFB UST SITES** TABLE 5

			1,2-Dichloroethane - EPA 601	me - EPA 601					9	Ethylene Dibromide - EPA 504.1	de - EPA 5	04.1			1
Field ID	Lab ID#	Sampling Date	Extraction Date	Elapsed Time	Analysis Date	Elapsed Time		Lab ID#	Sampling Date	Extraction Date	Elapsed Time		Analysis Date	Elapsed	
MW3021-1 (3)	8803.01	2/20/92	NA	NA	2/24/92	4	days	8803.01	2/20/92	2/24/92	4	days	2/25/92	ν.	days
MW4204-1	8794.06	2/19/92	NA	NA	2/24/92	'n	days	8794.06	2/19/92	2/24/92	٧	days	2/25/92	9	days
MW4204-1 MSD (1)	8794.07	2/19/92	NA	NA	2/24/92	S	days	8794.07	2/19/92	NA	NA		2/25/92	9	days
MW4204-1 MS (2)	8794.08	2/19/92	NA	NA	2/24/92	S	days	8794.08	2/19/92	NA	NA		2/25/92	9	days
MW6001-1	8794.05	2/19/92	NA	NA	2/24/92	5	days	8794.05	2/19/92	2/24/92	ν.	days	2/25/92	9	days
T MW6024-1	8794.04	2/19/92	NA	NA	2/24/92	5	days	8794.04	2/19/92	2/24/92	5	days	2/25/92	9	days
MW792-1	8803.04	2/20/92	NA	NA	2/24/92	4	days	8803.04	2/20/92	2/24/92	4	days	2/25/92	5	days
MW91129-1	8794.01	2/19/92	NA	NA	2/24/92	5	days	8794.01	2/19/92	2/24/92	ς.	days	2/24/92	S	days
MW91601-1 (5)	8794.02	2/19/92	NA	NA	2/24/92	5	days	8794.02	2/19/92	2/24/92	2	days	2/24/92	5	days
MW981-1	8803.03	2/20/92	NA	NA	2/24/92	4	days	8803.03	2/20/92	2/24/92	4	days	2/25/92	v	days
MW9990-1	8819.01	2/21/92	NA	N A	2/26/92	5	days	8819.01	2/21/92	2/24/92	3	days	2/25/92	4	days
UST-ER1	8794.10	2/19/92	NA	NA	2/24/92	'n	days	8794.10	2/19/92	2/24/92	ν.	days	2/25/92	9	days
UST-ER2	8803.05	2/20/92	NA	NA	2/24/92	4	days	8803.05	2/20/92	2/24/92	4	days	2/25/92	ν.	days
UST-TB1	8794.03	2/19/92	NA	NA	2/24/92	۲۷	days	8794.03	2/19/92	2/24/92	8	days	2/24/92	ς.	days
UST-TB2	8803.02	2/20/92	NA	NA	2/24/92	4	days	8803.02	2/20/92	2/24/92	4	days	2/25/92	3	days
UST-TB3 (4)	8819.02	2/21/92	NA	NA	2/26/92	ν,	days	8819.02	2/21/92	2/24/92	3	days	2/25/92	4	days

Matrix spike duplicate
 Matrix spike
 Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
 Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
 Duplicate of MW91129-1
 NA - Not applicableNot analyzed

SUMMARY OF EXTRACTION AND ANALYSIS DATES TABLE 5 (Cont'd) **EGLIN AFB UST SITTES**

Lab Sampling E MW3021-1 (3) 8803.01 2/20/92 MW4204-1 8794.06 2/19/92 MW4204-1 MSD (1) 8794.07 2/19/92 MW4204-1 MS (2) 8794.08 2/19/92 MW6001-1 8794.05 2/19/92 MW6024-1 8794.04 2/19/92 MW792-1 8803.04 2/19/92	g Extraction Elapsed Date Time NA NA	-	Elapsed			O	Tetrootion	Floncod	Anglyeic	•	
8803.01 8794.06 (2) 8794.07 8794.05 8794.04	NA	Date	Time		Lab ID#	Samping Date	Extraction Date	Time	Date	Elapsed	
MSD (1) 8794.07 MS (2) 8794.08 8794.05 8794.04		2/25/92	5	days 8	8803.01	2/20/92	Ν	Y Y	3/4/92	13	days
MSD (1) 8794.07 MS (2) 8794.08 8794.05 8803.04	NA	2/25/92	p 9	days 8	8794.06	2/19/92	NA	NA A	3/4/92	14	days
MS (2) 8794.08 8794.05 8794.04 8803.04	Y.	2/25/92	9 9	days 8	8794.07	2/19/92	NA A	Ϋ́Z	3/4/92	14	days
8794.05 8794.04 8803.04	N	2/25/92	р 9	days 8	8794.08	2/19/92	NA	YZ Y	3/4/92	14	days
8794.04	NA	2/25/92	9	days 8	8794.05	2/19/92	NA	NA A	3/4/92	14	days
8803.04	NA	2/25/92	р 9	days 8	8794.04	2/19/92	NA	NA	3/4/92	14	days
	NA	2/25/92	S	days 8	8803.04	2/20/92	NA	NA	3/4/92	13	days
MW91129-1 8794.01 2/19/92	NA	2/25/92	р 9	days 8	8794.01	2/19/92	NA	NA A	3/4/92	14	days
MW91601-1 (5) 8794.02 2/19/92	NA	2/25/92	9	days 8	8794.02	2/19/92	NA	NA	3/4/92	14	days
MW981-1 8803.03 2/20/92	NA	2/25/92	S	days 8	8803.03	2/20/92	NA	N A	3/4/92	13	days
MW9990-1 8819.01 2/21/92	NA	3/4/92	12 d	days 8	8819.01	2/21/92	NA	NA	3/4/92	12	days
UST-ER1 8794.10 2/19/92	NA	2/25/92	9	days 8	8794.10	2/19/92	NA	NA	3/4/92	14	days
UST-ER2 8803.05 2/20/92	NA	2/25/92	5 6	days 8	8803.05	2/20/92	NA	NA	3/4/92	13	days
UST-TB1 8794.03 2/19/92	NA	2/25/92 *	9	days 8	8794.03	Y'A	NA	N	NA	NA	
UST-TB2 8803.02 NA	NA	NA	NA V	~	8803.02	NA	NA	NA	NA	NA	
UST-TB3 (4) 8819.02 NA	NA	NA	NA	~	8819.02	NA	NA	NA	NA	NA	

(1) - Duplicate
(2) - Matrix spike
(3) - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
(4) - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
(5) - Duplicate of MW91129-1
* - Analysis performed but not requested
NA - Not applicable/Not analyzed
AT\$10,9231189/USTHTIMS.XLS

SUMMARY OF EXTRACTION AND ANALYSIS DATES TABLE 5 (Cont'd) **EGLIN AFB UST SITTES**

			BTEX - EPA 602	PA 602						MTBE - EPA 602	3PA 602			ı
Field ID	Lab ID#	Sampling Date	Extraction Date	Elapsed Time	Analysis Date	Elapsed Time	' 	Lab ID#	Sampling Date	Extraction Date	Elapsed Time	Analysis Date	Elapsed Time	
MW3021-1 (3)	8803.01	2/20/92	N	NA	2/21/92		day	8803.01	2/20/92	NA	NA	2/21/92	-	day
MW4204-1	8794.06	2/19/92	NA	NA	2/21/92	7	days	8794.06	2/19/92	NA	NA	2/21/92	2	days
MW4204-1 MSD (1)	8794.07	2/19/92	NA	NA	2/21/92	2	days	8794.07	2/19/92	NA	NA	2/21/92	2	days
MW4204-1 MS (2)	8794.08	2/19/92	NA A	NA	2/21/92	7	days	8794.08	2/19/92	NA	NA	2/21/92	2	days
MW6001-1	8794.05	2/19/92	NA	NA	2/21/92	2	days	8794.05	2/19/92	NA	NA	2/21/92	2	days
ى MW6024-1	8794.04	2/19/92	NA	NA	2/21/92	2	days	8794.04	2/19/92	NA	NA	2/21/92	2	days
MW792-1	8803.04	2/20/92	NA	NA	2/21/92	-	day	8803.04	2/20/92	NA	NA	2/21/92	-	day
MW91129-1	8794.01	2/19/92	NA	NA	2/21/92	2	days	8794.01	2/19/92	NA	NA	2/21/92	2	days
MW91601-1 (5)	8794.02	2/19/92	NA	NA	2/21/92	7	days	8794.02	2/19/92	NA	NA	2/21/92	7	days
MW981-1	8803.03	2/20/92	NA	NA	2/21/92	-	day	8803.03	2/20/92	NA	NA	2/21/92	-	day
MW9990-1	8819.01	2/21/92	NA	NA	2/25/92	4	days	8819.01	2/21/92	NA	NA	2/25/92	4	days
UST-ER1	8794.10	2/19/92	NA	NA	2/21/92	7	days	8794.10	2/19/92	NA	NA	2/21/92	7	days
UST-ER2	8803.05	2/20/92	NA	NA	2/21/92	-	day	8803.05	2/20/92	NA	NA	2/21/92	1	day
UST-TB1	8794.03	2/19/92	NA	NA	2/21/92	2	days	8794.03	2/19/92	NA	NA	2/21/92	7	days
UST-TB2	8803.02	2/20/92	NA	NA	2/21/92	1	day	8803.02	2/20/92	NA	NA	2/21/92		day
UST-TB3 (4)	8819.02	2/21/92	NA	NA	2/25/92	4	days	8819.02	2/21/92	NA	NA	2/25/92	4	days
														ı

Matrix spike duplicate
 Matrix spike
 Mastrix spike
 Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
 Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
 Duplicate of MW91129-1
 NA - Not applicableNot analyzed

AT510/923J189/USTHTIMS.XLS

SUMMARY OF EXTRACTION AND ANALYSIS DATES TABLE 5 (Cont'd) EGLIN AFB **UST SITTES**

Field ID	Lab ID#	Sampling Date	Extraction Date	Elapsed		Analysis Date	Elapsed	
MW3021-1 (3)	8803.01	2/20/92	2/28/92	œ	days	3/6/92	15	days
MW4204-1	8794.06	2/19/92	2/28/92	6	days	3/6/92	16	days
MW4204-1 MSD (1)	8794.07	2/19/92	2/28/92	6	days	3/6/92	16	days
MW4204-1 MS (2)	8794.08	2/19/92	2/28/92	6	days	3/6/92	16	days
MW6001-1	8794.05	2/19/92	2/28/92	6	days	3/6/92	16	days
MW6024-1	8794.04	2/19/92	2/28/92	6	days	3/6/92	16	days
MW792-1	8803.04	2/20/92	2/28/92	∞	days	3/6/92	15	days
MW91129-1	8794.01	2/19/92	2/28/92	6	days	3/6/92	16	days
MW91601-1 (5)	8794.02	2/19/92	2/28/92	o	days	3/6/92	16	days
MW981-1	8803.03	2/20/92	2/28/92	œ	days	3/6/92	15	days
MW9990-1	8819.01	2/21/92	2/28/92	7	days	3/6/92	14	days
UST-ER1	8794.10	2/19/92	2/28/92	6	days	3/6/92	16	days
UST-ER2	8803.05	2/20/92	2/28/92	œ	days	3/6/92	15	days
UST-TB1	8794.03	NA	NA	NA		NA	NA	
UST-TB2	8803.02	N	NA	NA		NA	NA	
UST-TB3 (4)	8819.02	NA A	NA	NA		NA	NA	

Matrix spike duplicate
 Matrix spike
 Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
 Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
 Duplicate of MW91129-1
 NA - Not applicableNot analyzed

AT510/923J189/USTHTIMS.XLS

TABLE 6 SUMMARY OF QC ACCEPTANCE CRITERIA AND DETECTION LIMITS FOR MATRIX SPIKES, MATRIX SPIKE DUPLICATES AND SURROGATE SPIKES UST SITES EGLIN AFB

Analyte	Method	Detection Limit	Units	Spike Recovery, Percent (Range)	Relative Percent Difference (Range)
1,2-Dichloroethane	EPA 601	1.0	ug/L	80-120 %	< 20 %
Ethylene Dibromide	EPA 504.1	0.01	ug/L	80-120 %	< 20 %
Petroleum Hydrocarbons	EPA 418.1	500 *	ug/L	75-125 %	< 20 %
Lead	EPA 239.2	3.0	ug/L	75-125 %	< 20 %
BTEX	EPA 602	1.0	ug/L	80-120 %	< 20 %
МТВЕ	EPA 602	1.0	ug/L	80-120 %	< 20 %
Polynuclear Aromatic Hydrocarbons	EPA 610	1.0	ug/L	80-120 %	< 20 %

^{* -} Varies. See Table 7 for complete list of detection limits

SUMMARY OF ANALYTICAL RESULTS EGLIN AFB **UST SITTES** TABLE 7

Material Sample Marity Benetian Detection Detection Detection Page (mg/L) County Linit Linit			1,2-Dichloroethane	roethane	Ethylene Dibromide	lbromide	Petroleum Hydrocarbons	drocarbons	
Water MWW302L-1 (3) 10 ND 0.01 ND 500 ND Water MWW420L-1 (3) 10 184 0.01 ND 500 ND Water MW420L-1 MSC (2) 10 184 0.01 180 500 ND Water MW420L-1 MSC (2) 10 17.2 0.01 1.62 500 25,000 Water MWW50L-1 MSC (2) 1,0 ND 0.01 ND 500 ND Water MW960L-1 1,0 ND 0.01 ND 500 ND Water MW9950L-1 (1) 1,0 ND 0.01 ND 500 ND Water WW9950L-1 (1) 1,0 ND 0.01 ND 500 ND Water WW9950L-1 (1) 1,0 ND 0.01 ND 500 ND Water UST-IBB (1) 1,0 ND 0.01 ND 500 ND Water UST-IBB (4)	Sample Matrix	Sample ID	Detection Limit (11s/L)	Result	Detection Limit (no/L)	Result	Detection Limit	Result (119/L)	Page Number
Water MW4204-1 MSD (2) 10 01 ND 500 ND Water MW4204-1 MSD (2) 10 184 0.01 180 500 28,000 Water MW4204-1 MSD (2) 10 172 0.01 162 500 25,000 Water MW4204-1 MS (2) 10 ND 0.01 ND 500 ND Water MW4021-1 1,0 ND 0.01 ND 500 ND Water MW991-1 1,0 ND 0.01 ND 500 ND Water MW9950-1 1,0 ND 0.01 ND 500 ND Water WW9950-1 1,0 ND 0.01 ND 500 ND Water UST-BR1 1,0 ND 0.01 ND 500 ND Water UST-BR1 1,0 ND 0.01 ND ND ND Water UST-BR2 1,0 ND N	Water	MW3021-1 (3)	1.0	QN	0.01	QN	200	QN	B-43,B-45,B-48
Water MW4204-1 MSD (2) 164 614 184 616 58,000 28,000 Water MW4204-1 MS (2) 10 17.2 0.01 1.62 50 25,000 Water AMX501-1 1 ND 0.01 ND 50 ND Water AMX901-1 1 ND 0.01 ND 50 ND Water AW981-1 1 ND 0.01 ND 50 ND Water WASHINGTON 1 ND 0.01 ND 50 ND Water UST-TBS 1 ND ND	Water	MW4204-1	1.0	ND	0.01	QN	200	QN	B-6,B-8,B-10
Water MW4204-1 MS (2) 10 17.2 61.7 62.0 55.00 Water MW6024-1 10 ND 01 ND 50 ND Water MW9123-1 10 ND 021 ND 50 ND Water MW91123-1 1,0 ND 021 ND 50 ND Water MW91123-1 1,0 ND 021 ND 50 ND Water MW95121 1,0 ND 021 ND 50 ND Water UST-ERI 1,0 ND 021 ND 50 ND Water UST-ERI 1,0 ND 021 ND 50 ND Water UST-ERI 1,0 ND 021 ND ND ND Water UST-ERI 1,0 ND ND ND ND ND Water UST-ERI 1,0 ND ND ND ND	Water	MW4204-1 MSD (2)	1.0	18.4	0.01	1.80	200	28,000	B-10, B-27, B-32
Water MW6001-1 10 ND 010 ND	Water	MW4204-1 MS (2)	1.0	17.2	0.01	1.62	200	25,000	B-10, B-27, B-32
Water MW6024-1 1.0 ND 0.0 ND	Water	MW6001-1	1.0	ND	0.01	N	200	QN	B-6,B-8,B-10
Water MW9129-1 1.0 ND 0.01 ND 500 ND Water MW91129-1 1.0 ND 0.01 ND 500 ND Water MW981-01 1.0 ND 0.01 ND 500 ND Water UST-ERL 1.0 ND 0.01 ND 500 ND Water UST-ERL 1.0 ND 0.01 ND 500 ND Water UST-TERL 1.0 ND 0.01 ND 500 ND Water UST-TERL 1.0 ND 0.01 ND 500 ND Water UST-TERL 1.0 ND 0.01 ND ND ND Water UST-TERL 1.0 ND 0.01 ND ND ND Water UST-TERL 1.0 ND 0.01 ND ND ND Water UST-TERL 1.0 ND ND <		MW6024-1	1.0	ND	0.01	ND	200	QN	B-6,B-8,B-10
MW91129-1 1.0 ND 0.01 ND 500 ND MW91601-1 (1) 1.0 ND 0.01 ND 500 ND MW980-1 1.0 ND 0.01 ND 500 1,60 UST-ERI 1.0 ND 0.01 ND 500 ND UST-TB1 1.0 ND 0.01 ND 500 ND UST-TB3 (4) 1.0 ND 0.01 ND NA NA		MW792-1	0.1	QN	0.01	ND	200	QN	B-43,B-45,B-48
MW91601-1 (1) 1.0 ND 0.01 ND 500 ND MW981-1 1.0 ND 0.01 ND 1,600 ND MW9990-1 1.0 ND 0.01 ND 1,600 ND UST-TR1 1.0 ND 0.01 ND ND ND UST-TB3 1.0 ND ND ND ND ND UST-TB3 (4) 1.0 ND ND ND ND	Water	MW91129-1	1.0	QN	0.01	ON	200	QN	B-6,B-8,B-10
MW991-1 1.0 ND 0.01 ND 600 1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,600 ND 1,600 ND N	Water	MW91601-1 (1)	1.0	ND	0.01	ND	200	QN	B-6,B-8,B-10
MW9990-1 1.0 ND 0.01 ND 1,600 UST-ER1 1.0 ND 0.01 ND ND UST-ER2 1.0 ND 0.01 ND ND UST-TB1 1.0 ND 0.01 ND ND UST-TB3 (4) 1.0 ND NA NA NA	Water	MW981-1	1.0	QN ON	0.01	ND	200	009	B-43,B-45,B-48
UST-ER1 1.0 ND 0.01 ND ND ND UST-ER2 1.0 ND 0.01 ND ND ND UST-TB1 1.0 ND 0.01 ND NA NA UST-TB3 (4) 1.0 ND 0.01 ND NA NA	Water	MW9990-1	1.0	QN	0.01	ND	1000	1,600	B-73,B-75,B-77
UST-ER2 1.0 ND 0.01 ND ND ND UST-TB1 1.0 ND 0.01 ND ND* ND* UST-TB3 (4) 1.0 ND 0.01 ND NA NA	Water	UST-ER1	1.0	ND	0.01	ND	500	Q.	B-6,B-8
UST-TB1 1.0 ND 0.01 ND 500 ND* UST-TB2 1.0 ND 0.01 ND NA NA UST-TB3 (4) 1.0 ND 0.01 NA NA NA	Water	UST-ER2	1.0	QN	0.01	N	1000	ND	B-43,B-45,B-48
UST-TB2 1.0 ND 0.01 ND NA NA NA NA UST-TB3 (4) 1.0 ND ND 0.01 ND NA NA NA	Water	UST-TB1	1.0	ND	0.01	QN	200	*QN	B-6,B-8,B-10
UST-TB3 (4) 1.0 ND 0.01 ND NA NA NA	Water	UST-TB2	1.0	QN	0.01	QN	NA	NA	B-43,B-45
	Water	UST-TB3 (4)	1.0	ND	0.01	QN	NA	NA	B-73,B-75

(1) - Duplicate of MW91129-1
(2) - Matrix spike or matrix spike duplicate
(3) - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
(4) - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
J - Estimated value
N - Tentative identification
ND - Not detected
NA - Not analyzed/Not applicable
* - Analysis performed but not requested

SUMMARY OF ANALYTICAL RESULTS TABLE 7 (Cont'd) **EGLIN AFB UST SITES**

Music Music Detection Chicklish Chart Lindt Checklish Chart			Lead	TEI .	B	BTEX	MTBE	3E	Polynuclear Aro	Polynuclear Aromatic Hydrocarbons	
Assatje ID Limit (wg1) Result (wg1) Limit (wg1) Limit (wg1) Result (wg1) Limit (wg1) Result (wg1) Application (wg1) Appl			Detection		Detection		Detection		Detection		
Water MW9201-1 (3) 30 ND 1.0 Polumen-6.5 lM 1.0 ND 1.0 NARES Water MW4204-1 MS (2) 3.0 16.5 1.0 VARIES 1.0 VARIES 1.0 NARES	Sample Matrix	Sample ID	Limit (ug/L)	Result (ug/L)	Limit (ug/L)	Result (ug/L)	Limit (ug/L)	Result (ug/L)	Limit (ug/L)	Result (ug/L)	Page Number
Water MYM4204-1 MSD (2) 6,91 1,0 ND 1,0 ND 1,0 ND 1,0 NARIES 1,0 VARIES 1,0 NAR 1,0 <th< td=""><td>Water</td><td>MW3021-1 (3)</td><td>3.0</td><td>QN</td><td>1.0</td><td>Toluene - 0.5 JN</td><td>1.0</td><td>QN</td><td>1.0</td><td>Fluoranthene - 2.0 J</td><td>B-47,B-49,B-50</td></th<>	Water	MW3021-1 (3)	3.0	QN	1.0	Toluene - 0.5 JN	1.0	QN	1.0	Fluoranthene - 2.0 J	B-47,B-49,B-50
Water MW4204-1 MSD (2) 3.0 8.01 1.0 VARIES 1.0 4.45 1.0 VARIES Water MW4204-1 MS (2) 3.0 16.51 1.0 VARIES 1.0 4.45 1.0 VARIES Water MW6001-1 3.0 14.2 1.0 ND	Water	MW4204-1	3.0	6.9 J	1.0	QN	1.0	2	1.0	1.0 UJ	B-11,B-21,B-22
Water MW4204-1 MS (2) 3.0 16.51 1.0 VARIES 1.0 44.6 1.0 VARIES Water MW6001-1 3.0 10.2 1.0 ND 1.0 ND 1.0 1	Water	MW4204-1 MSD (2)	3.0	8.0 J	1.0	VARIES	1.0	42.4	1.0	VARIES	B-11, B-29, B-34
Water MW6021-1 3.0 HD 1.0 HD H	Water	MW4204-1 MS (2)	3.0	16.5 J	1.0	VARIES	1.0	44.6	1.0	VARIES	B-11, B-29, B-34
Water MW60241 30 102 ND 10 ND 10 10 10 Water MW9129-1 30 26.6 10 ND 10 ND 10 10 10 Water MW9910-1 (1) 3.0 21.4 1.0 ND 10 ND 10 10 10 10 Water MW9950-1 3.0 1.4 1.0 ND ND 1.0 ND	Water	MW6001-1	3.0	QN	1.0	QN	1.0	QN QN	1.0	1.0 UJ	B-11,B-19,B-20
Water MW992-1 3.0 142.0 1.0 ND 1.0 ND 1.0 1.0 1.0 Water MW99129-1 3.0 21.4 1.0 ND 1.0 ND 1.0	Water	MW6024-1	3.0	10.2	1.0	QN	1.0	Ð	1.0	1.0 UJ	B-11,B-17,B-18
MW91129-1 3.0 26.6 1.0 ND 1.0 ND 1.0 1.0 UJ MW9160-1 (1) 3.0 21.4 1.0 ND 1.0 ND 1.0 1.0 UJ MW980-1 3.0 ND 1.0 ND 1.0 ND 1.0 ND UST-ER1 3.0 ND 1.0 ND 1.0 ND 1.0 ND UST-TB1 NA NA 1.0 ND 1.0 ND NA NA UST-TB2 NA NA 1.0 ND 1.0 ND NA NA		MW792-1	3.0	142.0	1.0	ON	1.0	QN	1.0	1.0 UJ	B-47,B-55,B-56
MW91601-1 (1) 3.0 21.4 1.0 ND 1.0 ND 1.0 1.0 UJ MW981-1 3.0 ND 1.0 ND 1.0 ND 1.0 ND UST-ER1 3.0 ND 1.0 ND 1.0 ND 1.0 ND UST-TB1 NA NA 1.0 ND ND ND NA NA UST-TB3 (4) NA NA 1.0 ND ND ND NA NA	Water	MW91129-1	3.0	26.6	1.0	QN	1.0	S S	1.0	1.0 UJ	B-11,B-12,B-13
MW981-1 3.0 5.4 1.0 ND 1.0 ND 1.0 ND 1.0 ND WW9990-1 3.0 ND 1.0 ND 1.0 ND 1.0 ND UST-ER1 3.0 ND 1.0 ND 1.0 ND 1.0 1.0 1.0 UST-TB1 NA NA 1.0 ND 1.0 ND NA NA NA UST-TB3 (4) NA NA 1.0 ND ND ND NA NA NA	Water	MW91601-1 (1)	3.0	21.4	1.0	ON	1.0	S	1.0	1.0 UJ	B-11,B-14,B-15
MAY990-1 3.0 ND 1.0 ND ND <td>Water</td> <td>MW981-1</td> <td>3.0</td> <td>5.4</td> <td>1.0</td> <td>N</td> <td>1.0</td> <td>QN QN</td> <td>1.0</td> <td>1.0 UJ</td> <td>B-47,B-53,B-54</td>	Water	MW981-1	3.0	5.4	1.0	N	1.0	QN QN	1.0	1.0 UJ	B-47,B-53,B-54
UST-ER1 3.0 ND 1.0 ND 1.0 ND 1.0 1.0 UJ UST-TB1 NA NA 1.0 ND 1.0 ND NA NA UST-TB3 (4) NA NA 1.0 ND ND NA NA	Water	MW9990-1	3.0	QN	1.0	ON ON	1.0	N N	1.0	QN	B-78,B-79,B-80
UST-ER2 3.0 ND 1.0 Xylenes - 0.7 JN 1.0 ND 1.0 1.0 UJ 1.0 UJ ND 1.0 UJ NA	Water	UST-ER1	3.0	Q.	1.0	MD	1.0	B	1.0	1.0 UJ	B-11,B-23,B-24
UST-TB1 NA NA 1.0 ND ND NA NA UST-TB2 NA NA NA ND ND NA NA UST-TB3 (4) NA NA 1.0 ND NA NA	Water	UST-ER2	3.0	QN	1.0	Xylenes - 0.7 JN	1.0	g	1.0	1.0 UJ	B-47,B-57,B-58
UST-TB2 NA NA 1.0 ND 1.0 NA NA UST-TB3 (4) NA NA 1.0 ND 1.0 NA NA	Water	UST-TB1	NA	NA	1.0	ND	1.0	8	NA	NA	B-16
UST-TB3 (4) NA NA 1.0 ND 1.0 ND NA NA	Water	UST-TB2	NA	NA	1.0	QN	1.0	g	NA	NA	B-52
	Water	UST-TB3 (4)	NA	NA	1.0	ND	1.0	8	NA	NA	B-81

(1) - Duplicate of MW91129-1
(2) - Matrix spike or matrix spike duplicate
(3) - Mistakenly labeled as MW3024-1 on laboratory data sheets for Ethylene Dibromide analysis
(4) - Mistakenly labeled as MW91601 on laboratory data sheets for Ethylene Dibromide analysis
J - Estimated value

N - Tentative identification

ND - Not detected

NA - Not analyzed/Not applicable
UJ - Due to holding times exceeding criteria for extractions, the method detection limits are estimated and all nondetections are qualified as estimated and presented with the detection limit

AT510/923J189/USTSAR.XLS

APPENDIX A
DRILLING RECORDS

ENGINEERING - SCIENCE soil boring log and well construction record

		50	'	001	RING LOG AND WE								
	lien	t <u>Eal</u>	in	ΔFR					Page 1 of 2				
=	11011	6144	30	21 -	Duke Field	Project I	. D .	AT5	10.04				
2	- re_	<u>втац.</u> g I.D	<u> </u>	B303	11 – 1	Well I.D. MW3021-1							
٦	01.11	y 1.U	<u></u>	3000	r R. Surrency	Date Installed 2/6/92							
ی	6010	y15t/		11166	ICA 4 OF TO	Date Installed 2/8/92							
D	rill	ing M	eth	оа <u>н</u>	SA 4.25 ID								
					plit Spoon	Casing Material 2" PVC Sch. 40							
		Start				Screen Material same, 0.010 slot							
D	ate	Compl	ete	a_2/	5/92				(ft) <u>0-49</u>				
D	rill	er Gr	ine	r Dr	illing Co.				l (ft) <u>49-59</u>				
					(in) <u>6</u>	Sump Inst	all	ed? <u>_1</u>	10				
) _59	Well Dept							
<u>-</u>	COUD	d Fle	vat	מחו	(ft) Not measured	TOC Eleva	tio	n (ft) <u>Not measured</u>				
					t) <u>55.25</u>	Water Lev	еl	(ft)_	55.25				
	•				5/92	Date Meas	ure	d 2/8	5/92				
U	ace	MEGSU	ı eu		5/ <u>5E</u>		_						
_	_	Z.					CLASS	l	WELL DIAGRAM				
_ =	E E	9	REC.	% <u>F</u>	LITHOLOGIC DESC	מחזקומי	150	GRAPHIC					
핃	(feet) SAMPLE	\S	뿐	/0/ (ppm)	ETHIOLOGIC BEST	7111 110W		LOG					
	22	BLOWS/6	ક્લ	HNu/OVA (ppm)			SOIL	1					
		一面			·		1"						
	0	 	 				SW.						
į		1,2,	50	75	SAND, fine to medium, trac	e silt. light	"	::::::i					
	7/	1.1			brown, very loose, slight	ly moist.							
	- 1 -	}			.	•							
	4						1 1						
	$\overline{\Lambda}$	1											
	5⊢χ	1,1,	70	75	SAND, fine to medium, mode	erately sorted,		::::::					
	<u> </u>	4			yellowish brown, very loo moist.	JSE, SILGULLY							
					moist.								
	7	1											
	4												
	+												
İ	10-X	2,3,	100	60	SAND, fine to medium, lig	nt brown, verv	1 1	******					
	$10 \square V$	4,6			loose to loose, slightly	moist.	1 1						
	/	1					1 1						
	4												
	7						1 1						
	+	/	ļ				1		5 6 6				
	15-JX	4.5.	85	100		erately sorted,		\cdots	Grout				
	M	6,7	1		orangish brown, loose, s	lightly moist.		:::::::	9 10 10				
	T]		1									
	+						[
İ	4												
		J			1		}						
	\mathbf{T}	7		050									
	50- X	4,4,	85	250	As above except very loos	e.							
	<u> 1</u> ,	4.4	1		1				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
]											
	1												
	4			1									
	1	_]											
	. N	12.	1400	320	0.110 0.17 0 1	dium tooco	SC						
1	25- X	3,9, 13,16	1	320	SAND and CLAY, fine to me								
1	<u> </u>	4 23, 10	}		silt, white to reddish b								
1	loose to firm, slightly moist.												
	1		1		Ì								
	4		1										
1	1	1	1	1	1		1	<u></u>					
1				1			SW		BMLTINUE				

ENGINEERING - SCIENCE soil boring log and well construction record

Seol		g I.C gist_			ency	Date Installed_2/6/92						
(feet)	SAMPLE	BLOWS/6 IN	%REC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG		WELL	DIAGRAM	
30-	X	9,12, 13,14	90	500	SAND, some silt, fine to to orangish brown, firm, moist.	medium, white slightly	SW					
35-	X	9,12, 13,15	100	300	SAND, fine to medium, tra to light gray, loose to moist.	ce silt, white firm, slightly			- Grout			
40	X	6,9, 12,13		160	SAND, fine to medium, wel white, loose to firm, sl	l sorted, ightly moist.						
45— -	X	5,9, 13,21		125	As above except loose to	very firm.			↓ ↑	8888	Bentonite Seal	
50—	X	7,11, 13,16		400	SAND, fine to medium, tra firm, moist.	ce silt, white,			Sand Pack			
55—		9,13, 14,14		340	As above, moist to 55.8',	wet at 55.8'.			San San		Screened Interva	
60-	X	11,10 11,13		130	SAND, fine to medium, som loose to firm. Total Depth = 59'	e silt, white,					∐	

			50) <u> </u>	BO	RING LOG AND WE	LL CONST	110					 -,
(Clie	en 1	t <u>Egl</u>	iņ	AFB						Page	1 of	2
						Field No. 4	Project I						
] I.D				Well I.D. Date Inst						_
						r R. Surrency	Date Inst						_
						ISA 4.25 ID Split Spoon	Casing Ma				Sch.	40	_
						92	Screen Ma	ter	`ial_	same.	0.010	slot	_
						7/92	Casing In	ter	rval	(ft) _C	-40		_
						illing Co.	Screened				40-50		_
E	Bore	∍h∙	ole C)iam	neter	(in) <u>6</u>	Sump Inst						
						.) _50	Well Dept	h	(ft)_	50			—
						(ft) Not measured	TOC Eleva Water Lev					·eu	_
						t) <u>48.12</u>	Date Meas						
'	Date	= 1	меаѕо	n e c	<u> </u>	7/92							
\vdash		П											ļ
:	∓ ⊋		ĸ	١.	∢			ASS	GRAPHIC		WELL DIAGR	AM	
2	DEPTH (feet)	SAMPLE	9/9	ÆC.	(mdd)	LITHOLOGIC DESC	RIPTION		GRAPHIC				
۱ '		SA	9/SMOTE	3-6	HNu/OVA (ppm)	·		SOIL	LOG				
L		4	ਲ					\Q					
	0-	\downarrow		ļ	-			SW		1			
l	_	١X١	4,3,	70	10	SAND, fine to medium, trac							
ı		И	3,2			fragments, reddish brown well sorted, slightly mo							
	_	1				well solled, slightly mo.	.50.						
	_			1									
	5-	Μ	1,3,	40	12	SAND, fine to medium, trac	e silt						
	3-	M	2,2	-		yellowish brown, very lo	se, moderately						
	-	П	•			sorted, slightly moist.					1 12		
	-	1											
	-	1		1							4 12		
	-	\mathbf{H}		ļ				1			1 12		
	10-	١X١	3,3,	75	5	SAND, fine to medium, ligh	nt yellowish				1 1/2		
	-	V	4,4			brown, very loose, modera slightly moist.	itely sorted,						
	_	↓			ł	Slightly moist.					1 12		
1	_]									1 1/2		
	4.5	M	4,5,	95	60	CAND Size to modium too				Grout			
	15-	1Ă1	8,13	33	55	SAND, fine to medium, trad orangish brown to 15', w				5			
	-	+	•		1	15.4', orangish brown fro	om 15.4-15.8',						
	-	-				white, fine sand from 15	.8-16', loose						
	-	4				to firm, slightly moist.							
	-	\downarrow											
l	20-	Ŋ	5,8,	75	13	SAND, fine to medium, whi	te to 20.2'.	1					
	_U	\mathbb{N}	8,7			brown from 20.2 to 21',	loose, slightly						
	•	П				moist.							
	-	1											
	-	1						1			<i>a 1 1 1</i>		
	-	1			}								
	25-	- ΙΧ	9,11,	85	200	SAND, fine to medium, whi							
	-	V	21,26			brown, banded, firm to ve	ery firm,		::::::::				
	_					slightly moist.			∤ ∷				
	-												
	-	∇							:::::::			BMLT	INU6

ENGINÉERING - SCIENCE soil boring log and well construction record

Borin Geolo	<u>Bldg.</u> g I.D	42	04 - 8420	- Field No. 4 04-1 rency	Project I Well I.D. Date Inst	М	W4204	-1)4	age 2 of 2
DEPTH (feet)	BLOWS/6 IN	%REC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS			WELL (DIAGRAM
30	4,8, 9,8	80	50	SAND, fine to medium, whit dark brown from 30.5-31' moderately sorted.	te to 30.5', , loose,	SW		- Grout		_
35-	8,14, 19,23	75	240	SAND, medium to coarse, wh brown, poorly sorted, fin firm, slightly moist.		ما المارية بين المارية والمارية				Bentonite Seal
40-	5,11, 14,19	90	6	SAND, medium to coarse to medium from 40.6–41', wh brown, firm, slightly mo	ite to light			Sand Pack		<u> </u>
45-	9,11, 16,16		180	SAND and SILT, fine to medium to coarse from 45 brown, wet at 45.5'.	dium to 45.5', .5-46', dark	SM		SaSa		— Screened Interval
50-	4,6, 9,23	70	280	SAND, medium to coarse, so brown, poorly sorted, loo firm, wet. Total Depth = 50'	ome silt, light ose to very	SW	\$ \tag{\tau} \tau	<u> </u>		
- 55 -										
60-										
65										BMLTINU6

Site Bldq. 6001 - Field No. 6 Boring I.D. SB6001-1 Geologist/Engineer R. Surrency Drilling Method HSA 4.25 ID Sampling Method Split Spoon Date Started 2/4/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Project I.D. AT510.04 Well I.D. MW6001-1 Date Installed 2/4/92 Casing Material 2" PVC Scheme Material same. 0.00 Casing Interval (ft) 0-49 Screened Interval (ft) 49:	age 1 of 3
Boring I.D. SB6001-1 Geologist/Engineer R. Surrency Drilling Method HSA 4.25 ID Sampling Method Split Spoon Date Started 2/4/92 Date Completed 2/4/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Well I.D. MW6001-1 Date Installed 2/4/92 Date Grouted 2/4/92 Casing Material 2" PVC School Screen Material same. 0.00 Casing Interval (ft) 0-49 Screened Interval (ft) 49-	2 40
Geologist/Engineer R. Surrency Drilling Method HSA 4.25 ID Sampling Method Split Spoon Date Started 2/4/92 Date Completed 2/4/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Date Installed 2/4/92 Date Grouted 2/4/92 Casing Material 2" PVC Schement Material same, 0.00 Casing Interval (ft) 0-49 Screened Interval (ft) 49-	2 40
Drilling Method HSA 4.25 ID Sampling Method Split Spoon Date Started 2/4/92 Date Completed 2/4/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Date Grouted 2/4/92 Casing Material 2" PVC Scheme Material same. 0.00 Casing Interval (ft) 0-49 Screened Interval (ft) 49- Sump Installed? No	2 40
Sampling Method Split Spoon Date Started 2/4/92 Date Completed 2/4/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Casing Material 2" PVC Scheme Ma	10
Date Started 2/4/92 Date Completed 2/4/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Screen Material same. 0.0 Casing Interval (ft) 0-49 Screened Interval (ft) 49 Sump Installed? No	7 40
Date Started 2/4/92 Screen Material same, 0.0 Date Completed 2/4/92 Casing Interval (ft) 0-49 Driller Griner Drilling Co. Screened Interval (ft) 49 Borehole Diameter (in) 6 Sump Installed? No	
Date Completed <u>2/4/92</u> Casing Interval (ft) <u>0-49</u> Driller <u>Griner Drilling Co.</u> Screened Interval (ft) <u>49</u> Borehole Diameter (in) <u>6</u> Sump Installed? <u>No</u>	
Driller <u>Griner Drilling Co.</u> Screened Interval (ft) <u>49</u> Borehole Diameter (in) <u>6</u> Sump Installed? <u>No</u>	
Borehole Diameter (in) <u>6</u> Sump Installed? <u>No</u>	-64
	· · · · · · · · · · · · · · · · · · ·
Ground Elevation (ft) Not measured TOC Elevation (ft) Not measured	asured
Depth to Water (ft) 59,13 Water Level (ft) 59.13	
Date Measured 2/5/92 Date Measured 2/5/92	
LITHOLOGIC DESCRIPTION WELL (SP GRAPHIC GRAPHIC SP GRAPHIC SP GRAPHIC SP GRAPHIC SP GRAPH	DIAGRAM
LITHOLOGIC DESCRIPTION LITHOLOGIC DESCRIPTION LITHOLOGIC DESCRIPTION LITHOLOGIC DESCRIPTION LITHOLOGIC DESCRIPTION LITHOLOGIC DESCRIPTION LITHOLOGIC DESCRIPTION	
SAMPLE (feet) # REC. SAMPLE SAMPLE	
3.2. 60 0 SAND, medium to coarse, trace silt.	
pebbly, reddish brown, very loose,	
slightly moist.	ł
	1
	1
5 1.2. 60 1 As above, well sorted, moist, very	
loose.	1
	}
	1
	1
10 1.1. 90 15 SAND, medium to coarse, trace silt,	}
10 1.1. 90 15 SAND, medium to coarse, trace silt, 1.1 reddish brown, very loose, moist.	}
	1
	1
	3
	1
	1
3.5. 90 20 SAND, fine to medium, some silt, trace clay, reddish brown, loose, moist.	1
Clay, reduish brown, loose, moist.	}
	1
	1
	1
SMXXXX	1
20-X 5.6. 95 140 SAND and SILT, trace clay, fine to	4
medium, reddish brown to light brown,	3
loose, trace of black color (possibly fuel staining), slight fuel odor,	1
moist.	4
	3
	1
25 V 5.9. 90 130 SAND, medium to coarse, trace silt,	1
13.16 light brown to 25', reddish brown from	7
25-26', slight fuel odor, loose to	1
firm, slightly moist.	1
	4
	a
	BMLTINU6

ENGINEERING - SCIENCE soil boring log and well construction record

SAND, medium, well sorted, white to light pink, loose to firm, slightly moist. SAND, medium, well sorted, white to light pink, loose to firm, slightly moist. SAND, medium, well sorted, white to light pink, loose to firm, slightly moist. SAND, medium, well sorted, white to light pink, loose to firm, slightly moist. SAND, medium, well sorted, white to light pink, loose to firm, slightly moist, slight odor. SAND, medium, well sorted, white to light pink, loose to firm, slightly moist, slight odor. SAND, medium, well sorted, white to light pink, loose to firm, slightly moist, slight odor.	Site Bori	<u>B</u> ng	I.D	60 S	001 - 8600	Field No. 6	Project I Well I.D. Date Inst	<u>M</u>	W6001	-1		e 2 of 3
35— 9.11. 90 220 SAND, medium to coarse, trace silt, reddish brown to 35.5; light gray from 35.5-36; slight odor, slightly moist. 35— 9.11. 90 220 SAND, medium to coarse, trace silt, reddish brown to 35.5; light gray from 35.5-36; slight odor, slightly moist. 40— 5.9. 80 180 SAND, medium to coarse, well sorted, white, slightly moist. 45— 6.11. 80 175 SAND, medium, well sorted, white to light pink, loose to firm, slightly moist, slight odor. 50— 13.20 60 170 As above. 55— 10.15. 60 60 SAND, medium, well sorted, white, no odor, firm, moist. As above. Total Darch = 64.	(feet)	SAMPLE	BLOWS/6 IN	%REC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION				WELL DIA	AGRAM
13.13 40—13.13 40—13.13 40—14.14 45—14.17 5.9. 80 180 SAND, medium to coarse, well sorted, white to light pink, loose to firm, slightly moist. 5.9. 80 175 SAND, medium, well sorted, white to light pink, loose to firm, slightly moist, slight odor. 5.9. 80 170 As above. The least a part of the pink and t	30			100	175	sorted, slight fuel odor,	nt gray, well , loose to	SW				
white, slight odor, loose to firm, slightly moist. SAND, medium, well sorted, white to light pink, loose to firm, slightly moist, slight odor. S.9. 170 As above. SAND, medium, well sorted, white, no odor, firm, moist. SAND, medium, well sorted, white, no odor, firm, moist.	35-			90	220	reddish brown to 35.5'.	light gray from			—— Grout		
16.17 1 ight pink, loose to firm, slightly moist, slight odor. 5.9.	40-			80	180	white, slight odor, loose						
5.9. 60 170 As above. 55— 10.15. 60 60 SAND, medium, well sorted, white, no odor, firm, moist. 60— 3.8. 10.13 95 17 As above, loose to firm, wet. As above. Total Depth = 64	45-	5 1	6,11, 6,17	80	175	light pink, loose to firm				 		entonite Seal
3.8, 95 17 As above, loose to firm, wet. As above. Total Depth = 64'	50-			60	170	As above.						™
3.8. 95 17 As above, loose to firm, wet. As above. Total Depth = 64'	55-			60	60		, white, no			Sand Pack		ened Interval —
Total Depth = 64'	60-			95	17	As above, loose to firm, w	wet.					Scree
65 Total Depth = 64'						As above.						<u> </u>
	65_	XI_		<u> </u>	<u> </u>	Total Depth = 64'		<u> </u>				

ENGINEERING - SCIENCE soil boring log and well construction record

Borir	Bldd ng I.	D. <u>5</u>	001 - 3B600	Field No. 6 1-1 ency	Page Project I.D. AT510.04 Well I.D. MW6001-1 Date Installed 2/4/92					
(feet)	BLOWS/6 IN	%REC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG	WELL DIAGRAM		
65	0,0	90	0			SW				
70-			:							
75-										
80-										
85—										
90										
95-										
100								BMLTINU		

				RING LOG AND WE				<u> </u>				
Clien	t Eq.	lin	AFB						Page 1 of	2		
				- Field No. 6	Project I	.D.	<u>AT5</u>	10.04				
Borin	g I.C). <u> </u>	B602	24-2	Well I.D.							
Geolo	gist/	/Eng	jinee	er R. Surrency	Date Inst	all	.ed_2	/5/92				
Drill	ing N	1eth	od_b	HSA 4.25 ID	Date Grou							
Sampl	ing N	1etr	od_S	Split Spoon	Casing Ma	Casing Material <u>2" PVC Sch. 40</u>						
Date	Start	ed_	2/5/	/92					<u>0.010 slot</u>			
Date	Comp 3	lete	d_2/	/5/92	Casing In					_		
Drill	er <u>Gr</u>	ine	r Dr	rilling Co.	Screened	Int	erva	1 (ft)	50-60			
Boreh	ole [Diam	neter	(in) <u>6</u>	Sump Inst	all	.ed?	No				
Depth	Dril	llec	ı (ft) _60	Well Depti							
Groun	d Ele	evat	ion	(ft) <u>Not measured</u>	TOC Eleva							
Depth	to V	vate	er (t	ft) <u>57.85</u>	Water Leve							
Date					Date Meas	ure	d <u>2/</u>	5/92				
ļ		т	1			П						
	ĸ					%			UELL DIACOAN			
DEPTH (feet) AMPLE	6 1	ن	HNu/0VA (ppm)		DIDITAL	اڭا	GRAPHIC	•	WELL DIAGRAM			
DEPTH (feet) SAMPLE)/S	REC.	(mqq)	LITHOLOGIC DESC	HILLION		LOG					
- \s	BLOWS/6	>4	₹ [™]			SOIL	LUU		==7			
	퓹			·		_{\O}						
0-		┼	-			SW.						
1 4XI	3,4,	80	10	SAND, fine to coarse, yell								
	6,8			very loose to loose, slig	htly moist.							
		1	ł									
		ļ										
1 17												
5 - X	2,2,	50	10	SAND, fine to medium, trac								
1 4	2,4			yellowish brown, very loc	se, slightly							
				moist.		-						
1 1												
l \												
10-X	3,2,	85	11	SAND, fine to medium, some	silt, reddish							
\prod	3,3			brown, very loose, slight								
I T												
1												
-			ļ			-						
44												
45_M	5,4,	90	11	As above except very loose	to longe			Grout				
15- X	5,5		- -	As above except very 10056	10035.			5				
		1				-						
\prod	7.	100	4.			-						
20 - X	7,9, 9,11	90	12	SAND, fine to medium, some								
 	-,			brown, loose to firm, sli	gitty moist.							
			l									
			1	1		-						
1			ſ	1								
l 						f						
25- X	4,7,	80	13	SAND, fine to medium, trac	e silt, white							
~~ [/\	9,11			to light pink, loose to f	irm,							
		1		moderately sorted, slight	ly moist.							
						f						
						.						
									BNLT	INU6		

ENGINEERING - SCIENCE soil boring log and well construction record

(feet)	SAMPLE	BLOWS/6 IN	XREC.	HNu/OVA (ppm)	LITHOLOGIC DESCRIPTION	SOIL CLASS	GRAPHIC LOG		WELL DI	AGRAM
30		5,12, 12,14	80	12	SAND, fine to medium, orangish brown to white, firm, banded, moderately sorted, slightly moist.	SW				
35-	X	5,9, 16,14	80	12	As above except loose to firm.			Graut		
40-	X	5,9, 13,15	75	450	SAND, fine to medium, white, loose to firm, well sorted, no odor, slightly moist.			.5 ————————————————————————————————————		
45-		6,14, 14,16		600	SAND, fine to medium, trace silt, white, firm, well sorted, no odor, very moist.			→		Ť
50-		9,11, 19,21	90	200	As above except firm to very firm, no odor, moist.			Pack		val ——> Bentonite- Seal
55— - - -		11,14, 18,16		240	SAND, fine to medium, well sorted, light brown to white, firm, no odor, moist to 55.7', wet at 55.7'.			Sand Pe		- Screened Interval
60-	X	0,0, 4,5	50	35	SAND, fine to medium, trace silt, orangish brown, very loose to loose, no odor, wet.			 		<u> </u>

Depth to water (ft) Not measured Date Measured 2/11/92 HIGH Not measured Date Measured 2/11/92 HIGH Not measured 2/11/92 HIGH Not measured 2/11/92 HIGH Not measured 2/11/92 WELL DIAGRAM O SW								
Boring I.D. S8792-1 Geologist/Engineer R. Surrency Drilling Method HSA 4.25 ID Sampling Method Split Spoon Date Started 2/10/92 Date Ground 2/11/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Ground Elevation (ft) 6 Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Date Measured 2/11/92 Elithologic Description MELL DIAGRAM Date Measured 2/11/92 Elithologic Description Well I.D. MW792-1 Date Installed 2/10/92 Casing Material 2: PVC Sch. 40 Casing Interval (ft) 0-3 Screened Interval (ft) 3-13 Sump Installed? No Well Depth (ft) 13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 Elithologic Description Well I.D. MW792-1 Date Installed 2/10/92 Casing Material 2: PVC Sch. 40 Casing Interval (ft) 3-13 Sump Installed? No Well Depth (ft) 13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 Elithologic Description Well I.D. MW792-1 Date Installed 2/10/92 Casing Material 2: PVC Sch. 40 Casing Material 2: PVC Sch.) f 1							
Geologist/Engineer R. Surrency Drilling Method HSA 4.25 ID Sampling Method Split Spoon Date Started 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Date Completed 2/10/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Date Measured 2/11/92 LITHOLOGIC DESCRIPTION Total Depth = 13' Date Installed 2/10/92 Date Grouted 2/11/92 Date Grouted 2/11/92 Casing Material 3mme. 0.010 slot Casing Interval (ft) 0-3 Screen Material 3mme. 0.010 slot Casing Interval (ft) 3-13 Screened Interval (ft) 3-13 Total Depth (ft) 13 Total Depth (ft) 13 Total Depth (ft) 13 Screened Interval (ft) 0-3 Screen Material 2me. 0.010 slot Casing Interval (ft) 0-3 Screened Interval (ft) Not measured (ft) Not measured Screened Interval (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 LITHOLOGIC DESCRIPTION WELL DIAGRAM Figure 13 WELL DIAGRAM WELL DIAGRAM WELL DIAGRAM WELL DIAGRAM SW Total Depth = 13' NELL DIAGRAM Total Depth = 13'								
Drilling Method HSA 4.25 ID Sampling Method Split Spoon Date Started 2/10/92 Date Completed 2/10/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Depth to Water (ft) Not measured Date Measured 2/11/92 EITHOLOGIC DESCRIPTION Date Grounded 2/11/92 Casing Material 2" PVC Sch. 40 Screen Material same. 0.010 slot Casing Interval (ft) 0-3 Screened Interval (ft) 3-13 Screened Interval (ft) 3-13 Screened Interval (ft) 3-13 Screened Interval (ft) 13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 EITHOLOGIC DESCRIPTION Date Ground 2/10/92 Casing Material 2" PVC Sch. 40 Screen Material same. 0.010 slot Casing Interval (ft) 3-13 Screened Interval (ft) 3-13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 EITHOLOGIC DESCRIPTION WELL DIAGRAM WELL DIAGRAM Fine to medium, moderately sorted, tan to light brown, slightly moist. Figure 1	•							
Date Started 2/10/92 Date Completed 2/10/92 Driller Griner Drilling Co. Borehole Diameter (in) 6 Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Depth to Water (ft) Not measured Date Measured 2/11/92 Date Measured 2/11/92 LITHOLOGIC DESCRIPTION Screen Material same, 0,010 sloid Casing Interval (ft) 3-13 Sump Installed? No Well Depth (ft) 13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 WELL DIAGRAM WELL DIAGRAM WELL DIAGRAM LITHOLOGIC DESCRIPTION O Hand Auger O Hand 100 24 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. Total Depth = 13' Screen Material same, 0,010 sloid Casing Interval (ft) 0-3 Screened Interval (ft) 3-13 Sump Installed? No Well Depth (ft) 13 TOC Elevation (ft) Not measured Date Measured 2/11/92 WELL DIAGRAM WELL DIAGRAM IN TOTAL Depth = 13' Not measured 2/11/92 WELL DIAGRAM FET 18								
Date Completed 2/10/92 Driller Griner Drilling Co. Borenole Diameter (in) 6 Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Depth to Water (ft) Not measured Date Measured 2/11/92 Hand 100 24 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 10-13, 3.6 Casing Interval (ft) 3-13 Screened Interval (ft) 3-13 Sump Installed? No Well Depth (ft) 13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 BRAPHIC LOG WELL DIAGRAM WELL DIAGRAM WELL DIAGRAM 100 24 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 10-13, 3.6 Total Depth = 13' Total Depth = 13'								
Driller Griner Drilling Co. Borehole Diameter (in) 6 Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Depth to Water (ft) Not measured Date Measured 2/11/92 Hand 100 24 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 10- 1,3,5 50 34 SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose, wet. Total Depth = 13' Screened Interval (ft) 3-13 Screened Interval (ft) 3-13 Sump Installed No Not measured Not measured Not measured Water Level (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 WELL DIAGRAM WELL DIAGRAM One of the medium Moderately sorted Not measured Not measured Not measured Date Measured 2/11/92 WELL DIAGRAM One of the medium Moderately sorted Not measured Not	<u> </u>							
Borehole Diameter (in) 6 Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Depth to Water (ft) Not measured Date Measured 2/11/92 LITHOLOGIC DESCRIPTION Well Depth (ft) 13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 LITHOLOGIC DESCRIPTION Well Diagram Well D								
Depth Drilled (ft) 13 Ground Elevation (ft) Not measured Depth to Water (ft) Not measured Date Measured 2/11/92 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92 LITHOLOGIC DESCRIPTION Hand 100 24 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 5-V 2.1, 1.3 3.6 50 34 SAND, fine to medium, moderately sorted, tan to white, very loose, wet. Total Depth = 13' Well Depth (ft) 13 TOC Elevation (ft) Not measured Water Level (ft) Not measured Date Measured 2/11/92								
Depth to Water (ft) Not measured Date Measured 2/11/92 Hand 100 24 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 1, 3 3, 50 34 SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13' Water Level (ft) Not measured								
Date Measured 2/11/92 The property of the p	TOC Elevation (ft) Not measured							
HELL DIAGRAM NELL Diagram Ne								
Hand Auger 5 2.1. 80 17 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 5 2.1. 80 17 SAND, fine to medium, moderately sorted, tan to white, very loose, wet. 10 3.6 50 34 SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'								
Hand Auger 100 24 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 5 2.1. 80 17 SAND, fine to medium, moderately sorted, tan to white, very loose, wet. 10 3.6 50 34 SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'								
Hand Auger 5 2.1. 1.3 80 17 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 5 1.3. 50 34 SAND, medium to coarse, trace silt. poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'								
Hand Auger 5 2.1. 80 17 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. 10 1.3. 50 34 SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'								
Hand Auger 5 2.1. 80 17 SAND, fine to medium, moderately sorted, tan to light brown, slightly moist. SAND, fine to medium, moderately sorted, tan to white, very loose, wet. 10 1.3. 50 34 SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'								
tan to light brown, slightly moist. 2.1. 1.3 SAND, fine to medium, moderately sorted, tan to white, very loose, wet. SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'	-Grout							
SAND, fine to medium, moderately sorted, tan to white, very loose, wet. 1.3 1.3. 50 34 SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'	0,000							
SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'								
SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'	al							
SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'	Š							
SAND, medium to coarse, trace silt, poorly sorted, tan to white, very loose to loose, wet. Total Depth = 13'								
Total Depth = 13'	ı							
Total Depth = 13'								
Total Depth = 13'								
Total Depth = 13'								
to loose, wet. Total Depth = 13'								
4								
20-								
25								
	ALTINU6							

	50	ΙL	RO	RING LOG AND WE	ELL CUNST	HUCIIC	JIV NECOND
Boring Geolog Drilli Sampli Date S Date C Drille Boreno Depth Ground	Idg. I.D ist/I ng Mo tart compl cr_Gr le D Dril Ele to W	91 Seth et ne et ne i ad te	129 B911 inee od - od - 2/3/ d - 2/ r Dr eter (ft ion r (f	r_R. Surrency SSA 4.25 ID Split Spoon (92 (3/92 Filling Co.	Screen Mad Casing Ind Screened : Sump Insta Well Depth	MW91129 alled 2/3 ted 2/3 terial 3 terial 5 terval Interval alled? [ft) 5 tion (ft) 6 cl (ft)	9-1 /3/92 /92 2" PVC Sch. 40 same. 0.010 slot (ft) 0-4 1 (ft) 4-14 No 14 t) Not measured 9.73
DEPTH (feet) SAMPLE	BLOWS/6 IN	X REC.	HNu/OVA (ppm)	LITHOLOGIC DESC	CRIPTION	SOIL CLASS	WELL DIAGRAM
0	3,5, 5,5	90	0.3	SAND, medium to coarse, tr reddish brown, shell frag fragments, loose, slightl	ments, asphalt	SW	Grout Y
5-	3,5, 5,2	75	200	SAND and SILT, reddish bro fragments, very loose to sand at 5.5', slightly mo 5.8'.	loose, gray	SM	Interval Bentonite-Seal
10-	2,3, 3,5	75	0.3	SAND, fine to medium, some wood fragments at 10', si organic odor, very loose	light	SW	Sand Pack — Sand Pack — Screened Interval Ber
	3,4, 9,12	30	O	SAND, medium to coarse, where fragments at 15', very lowell sorted, wet. Total Depth = 14'	nite, wood pose to firm,		<u> Y</u> (1,1111)
20-							
25-							
							BMLTINUS

	····	201		HING LUG AND WE				<u> </u>				
Clie	nt E	alin	AFB						Page	1 of 2		
				Eglin Main	Project I.D. <u>AT510.04</u>							
			SB98:		Well I.D.							
				er_R. Surrency	Date Inst	al:	led_ <u>2</u>	/10/92		· · · · · · · · · · · · · · · · · · ·		
				HSA 4.25 ID	Date Grouted 2/11/92							
				Split Spoon	Casing Material 2" PVC Sch. 40							
1	_			0/92	Screen Material same. 0.010 slot							
				/10/92	Casing Interval (ft) 0-34							
		•		rilling Co.	Screened					4		
	_			(in) 6	Sump Inst							
1					Well Depti							
				t) <u>44</u> (ft) <u>Not measured</u>	TOC Eleva				measi	iced		
					Water Lev							
				ft) <u>41.32</u>	Date Meas							
Date	меа	sure	<u> 2</u> _2	11/92	Date Meas	ui e	- U <u>- E</u> Z	11/32				
		<u> </u>		T T T T T T T T T T T T T T T T T T T		П						
	Z					CLASS			WELL DIAG	DAM		
HE 크	و الـ	ن ا	\$ =	L TTUOLOGIC DECC	יחזחדזהאי		GRAPHIC	•	MELL DIAG	IDAM		
DEPTH (feet)	SAMPLE OWS/6	EC.		LITHOLOGIC DESC	CHIPTION	1 [LOG					
	SAMPLE BLOWS/6	>4	\frac{1}{2}			SOIL		l r				
	=			·		$ \mathbf{s} $						
0-	-}					SW		1				
1 -1	Han		5	SAND, fine to medium, mode	erately sorted,							
]	V Aug	er		tan to light brown, sligh	ntly moist.							
1 1	Λ١]								
1 1	' V							1 1/2				
1 +	-}											
l 5⊢\`	X 1,1		600	As above except brown and	very loose.							
1 1	1.	1		·								
1 T												
1 1	-											
4												
1 1												
1 1	√ 1.1	. 80	320	SAND, fine to medium, mode	entaly contact	1 1						
10-	$\begin{bmatrix} 1 \\ 1 \end{bmatrix}$			brown, very loose, slight		1 1						
1 +	-		1	b. 0mm; very 1000c; 511g	,							
1 4						1 1						
						1 1						
1						1 1		1 5 /				
1 +								Grout				
15-	X 1,3	, 90	360	SAND, fine to medium, trac								
1 1	Д з,:	•		moderately sorted, yellow								
1 T				tan, very loose to loose	, slightly							
1				moist.								
4						1 1						
1 1	_											
1 20 1	√ 6,s	. во	80	SAND, fine to medium, well	l sonted							
20-	\\ 12.°		33	orangish brown, loose to								
1 +	<u> </u>			moist.	m, G119//C19							
	-											
1												
1 +	,					i	::::::::::::::::::::::::::::::::::::::					
25—	X з,⊊		12	SAND, fine to medium, well	l sorted,					an a		
1 - 1	13.	17		orangish brown to white,			•••••••••••••••••••••••••••••••••••••••			Seal		
1 T	7	1		slightly moist.						e]		
1 +										Se 37		
1 -			1					<u> </u>		★ ≝		
1 1			1							الما		
1 1	ΧĪ					1	::::::::::::::::::::::::::::::::::::::	1		BMLTINU6		
<i>K</i>				I								

ENGINEERING - SCIENCE soil boring log and well construction record

Site Bori	:! in:	g I.D	<u>98</u> 2	31 - 38981	Eglin Main -1 ency	Project I Well I.D. Date Inst	<u>M</u> 1	W981-	1	14	2 0	f 2
(feet)	SAMPLE	BLOWS/6 IN	XREC.	HNu/OVA (ppm)	LITHOLOGIC DESCRI	PTION	SOIL CLASS	GRAPHIC LOG		WELL DIA	GRAM	
30 -	X	9,18. 25,31	80	13	SAND, medium to coarse, po orangish brown to white, slightly moist.	oorly sorted, firm to dense,	SW					. 4- 41
35— - - -	X	9,13, 18,27	80	12	SAND, fine, well sorted, wery firm, slightly mois	white, firm to			Sand Pack		Interval	
40	X	6,10, 19,25	50	11	SAND, medium to coarse, polight gray to white, loose firm, wet.	porly sorted, se to very						₹
45 -	X	6,15, 19,52	70	11	SAND, medium to coarse, pobrown, firm to very dense Total Depth = 44'	porly sorted, e, wet.			<u>*</u>		<u>*</u>	
50-												
55- -												
60-												
65-												

Boring I.D. <u>SB9990-1</u> We	Page 1 of 1 oject I.D. <u>AT510.04</u>
Site Bldq. 9990 - Cape San Blas Pr Boring I.D. SB9990-1 We	Ciect I D AT510 04
Boring I.D. <u>SB9990-1</u> We	
	11 I.D. MW9990-1
Geologist/Engineer <u>R. Surrency</u> Da	te Installed <u>2/13/92</u>
Drilling Method <u>HSA 4.25 ID</u> Da	te Grouted <u>2/13/92</u>
Sampling Method Split Spoon Ca	sing Material <u>2" PVC Sch. 40</u>
Date Started 2/13/92 Sc	reen Material <u>same</u> . 0.010 slot
Date Completed 2/13/92 Ca	sing Interval (ft) <u>0-2</u>
Driller Griner Drilling Co. Sc	reened Interval (ft) 2-12
Borehole Diameter (in) 6 Su	mp Installed? <u>No</u>
Depth Drilled (ft) 12 We	11 Depth (ft) <u>12</u>
Ground Elevation (ft) Not measured TO	C Elevation (ft) Not measured
Denth to Water (ft) 2.82 Wa	ter Level (ft) <u>2.82</u>
Date Measured 2/13/92 Da	te Measured <u>2/13/92</u>
	₁₀
I I I I I I I I I I I I I I I I I I I	SE GRAPHIC WELL DIAGRAM
(feet) (feet) (feet) (helpm) (
(feet) SAMPLE S	100 100 100
(feet (feet Name Na	8
Post 100 0 SAND fine light brown, slight	SW Grout
Post 100 0 SAND, fine, light brown, slight hole	tly moist.
 	T to a v
/\	
<u> </u>	
5_ 2.3. 70 0 SAND, fine, white, very loose	Screened Interval Bentonite Seal
SAND, fine, white, very loose 6,11 wet.	
	Sand Pack
40 2.3. 50 0 SAND fine gray very lonse t	
10— 2.3. 50 0 SAND, fine, gray, very loose t	
 	
Total Depth = 12'	
15	
4 1	
.	
20-	
4	
	.
25-	
1	
	BALTINU6

Form 2 BRIDGE IN-CIDES Will bevolupses t Record

: Loca : Proj : Deve : Deve : Deve : Sell : Sell : Sell : Sell : Sell : Sell : Sell	tion; ject No lepson le	t Perform t Supervi t Hethed: ttoo of th ttoo (I.D.	B - Fold 50.04 set by: 6: set by: Fa- BK Pa- ell (pre-de	velopeent	11 65.63	(shek up)	Date Deve Date Deve Time Deve Time Deve Brilling	lepsent Sequilepsent Cos lepsent Beq lepsent Cos Methods	2-4-92 an: 2-11-92 pleted: 2-11-92 an: 1445 pleted: 1521 45A 425 T.D orsion fectors (qal/ft) i 1.8. Well=0.433 i 1.8. Well=1.472
: Data	i Rua		ise	: Veluce	levelopeen:			Recharge	සහභාගයක්කතුරුවේම්වරයක්ෂ්මකයම් දේශ්රික්කර් දේශ්රික්කරේම් දේශ්රික්කරේම් දේශ්රික්කරේම් දේශ්රික්කරේම් දේශ්රික්කරේම
! !	!	Start	Finish	(gal)		Conductivity (makes)		- Aato	Consents
2-1		1445		0	8.58	250	M.4		Pump at 63° Milky white water
//	!	11454		IP	8.33	200	1 21.1	5/0w	
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Form 2 BEINERING-SCIDEZ Hell Revelopment Record

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APPENDIX B ANALYTICAL DATA ANALYTICAL DATA BATCH 8794

MEMORANDUM

March 30, 1992

To:

File

From:

J. A. Banton

Subject:

Eglin AFB, Job No. AT510.04

Data Review, UST Sites

Batch 8794

TPH (E418.1) analyses met QA/QC criteria for holding times, blanks, and matrix spike/matrix spike duplicates.

BETX and MTBE (E602) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries. Benzene results that were analyzed by E602 failed to meet USAF maximum allowable detection limits; however, the detection limits did meet Florida petroleum contamination site clean-up criteria maximum allowable detection limits.

EDB (E504) analyses met QA/QC criteria for holding times, LCS matrix spike/matrix spike duplicate, and surrogate recoveries.

Lead (E239.2) analyses met QA/QC criteria for holding times. The matrix spike/matrix spike duplicate had a low percent recovery. The lead result in sample MW4204 was flagged "J" due to this problem.

1,2-DCE (E601) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries.

PAH (E610) analyses met criteria for blanks and surrogate recoveries. The samples MW91129-1, MW9160-1, MW6024-1, MW6001, MW4204, and UST-ER1 exceeded holding times criteria. All the compounds were flagged in the associated samples "UJ" along with the detection limit due to this problem. The compounds naphthalene, acenaphthylene, acenaphthene, benzo-(a)-anthracene, chrysene, and dibenzo(a,h)anthracene/indeno(1,2,3-cd)pyrene had low percent recovery in the matrix spike/matrix spike duplicate. These compounds were flagged "J" due to this problem in sample MW4204 (the spiked sample). In addition, the RPDs for all the

AT510\923J189

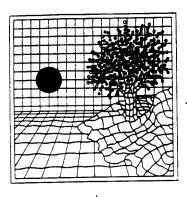
Memorandum to File Page 2 March 30, 1992

compounds in the matrix spike/matrix spike duplicate did not meet criteria. This problem require no flagging activity.

ENGINEERING-SCIENCE, INC.

J. A. Banton

Chemist, ES Atlanta



March 20, 1992

Ola Awosika
ENGINEERING SCIENCE, INC.
57 Executive Park South, Suite 590
Atlanta, GA 30329

Project: AT 510

SWLO Episode #: 8794.01 - 8794.10

Dear Mr. Awosika:

Enclosed we are submitting the analytical results for your samples received in our laboratory on February 20, 1992 for the above-captioned project.

If, in your review, you should have any questions or require additional information, please call.

Sincerely,

ALLA LO

Daryl Alstatt Project Officer

DA/rb

Enclosures



ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

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ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

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TAG	TINE	SAMPLE DESCRIPTION		MARKATINO	TO TO THE PORT OF	70	MATTROX	E	REMARKS
2-19	०।०।	MW91129 -1		X ≤			water		W. A.
1	010	1-10916MW) 			\	MCL	1.818.1
	1130	AW6024-1		3	X				5005 WS
→	1345	1-1009MW		3	×	 	,		6610
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Reding	slehed by:	2	Recieved for Laboratory by:	tory by:	ă	Dete/Time Rec	Remarks:		
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				4					

Distribution: Original Accompanies Shiomans Contas in Countrainy Flack Flace



1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2858

CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10HV

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-19-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8794.01 - .10
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-24-92

PROJECT: AT 510

METHOD REFERENCE FOR 1,2-DICHLOROETHAME: EPA 601

	SWLO	DET.		
CLIENT ID	I.D	LIMIT	UNIT	RESULT
MW91129-1	8794.01	1.0	ug/L	ND
MW91601-1	8794.02	1.0	ug/L	ND
UST-TB1	8794.03	1.0	ug/L	ND
MW6024-1	8794.04	1.0	ug/L	ND
MW6001-1	8794.05	1.0	ug/L	ND
MW4204-1	8794.06	1.0	ug/L	ND
UST-ER1	8794.10	1.0	ug/L	ND
.555	733			

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10HVS

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-19-92

ATTN: OLA AWOSIKA

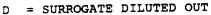
SWLO # 8794

METHOD REFERENCE: EPA 601

PROJECT: AT 510

HALOGENATED VOLATILE QA/QC SURROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8794.01	CIS-1,2-DICHLOROETHENE	96%
8794.02	CIS-1,2-DICHLOROETHENE	97%
8794.03	CIS-1,2-DICHLORDETHENE	103%
8794.04	CIS-1,2-DICHLOROETHENE	106%
8794.05	CIS-1,2-DICHLOROETHENE	105%
8794.06	CIS-1,2-DICHLOROETHENE	96%
8794.10	CIS-1,2-DICHLOROETHENE	108%



J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B-7

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

^{* =} SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10EDB

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: 8794.01 - .10

METHOD REFERENCE: EPA 504.1
DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

ETHYLENE DIBROMIDE

CLIENT ID	SWLO I.D	DET.	RESULTS	DATE ANALYZED
MW91129-1	8794.01	0.01	ND	02-24-92
MW91601-1	8794.02	0.01	ND	02-24-92
UST-TB1	8794.03	0.01	ND	02-24-92
MW6024-1	8794.04	0.01	ND	02-25-92
MW6001-1	8794.05	0.01	ND	02-25-92
MW4204-1	8794.06	0.01	ND	02-25-92
UST-ER1	8794.10	0.01	ND	02-25-92

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - ,10EDBSR

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

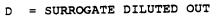
SWLO # 8794

METHOD REFERENCE: EPA 504.1

PROJECT: AT 510

ETHYLENE DIBROMIDE QA/QC SURROGATE RECOVERIES

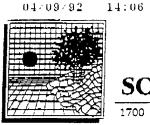
SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8794.01	1,1,2,2-TETRACHLOROSTHANE	108%
8794.02	1,1,2,2-TETRACHLORGETHANE	109%
8794.03	1,1,2,2-TETRACHLOROETHANE	106%
8794.04	1,1,2,2-TETRACHLOROETHANE	107%
8794.05	1,1,2,2-TETRACHLOROETHANE	111%
8794.06	1,1,2,2-TETRACHLOROETHANE	106%
8794.10	1,1,2,2-TETRACHLOROETHANE	108%



J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

^{* =} SURROGATE RECOVERY OUTSIDE OF QC LIMITS



SOUTHWEST LAB

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10TPH

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

DATE: 03-20-92

SAMPLE MATRIX: WATER SWLO #: 8794.01 - .10 DATE SUBMITTED: 02-20-92 DATE ANALYZED: 02-25-92

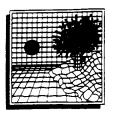
PROJECT: AT 510

METHOD REFERENCE FOR TOTAL PETROLEUM HYDROCARBON: EPA 418.1

	SWLO	DET.		
CLIENT ID	I.D	LIMIT_	UNIT	RESULT
		.		
MW91129-1	8794.01	0 . 5	mg/L	ND
MW91601-1	8794.02	0.5	mg/L	ND
UST-TB1	8794.03	0.5	mg/L	ND
MW6024-1	8794.04	0.5	mg/L	ND
MW6001-1	8794.05	0.5	mg/L	ND
MW4204-1	8794.06	0.5	mg/L	ND
MW4204-1 DUP	8794.07	0.5	mg/L	28
MW4204-1 MS	8794.08	0.5	mg/L	25
ust-eri	8794.10	0.5	mg/L	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01 - .10LD

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA DATE: 03-20-92

SAMPLE MATRIX: WATER
SWLO #: 8794.01 - .10
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 03-04-92

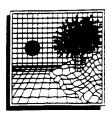
PROJECT: AT 510

METHOD REFERENCE FOR LEAD: EPA 239.2

	SWLO	DET.		
CLIENT ID	I.D	LIMIT	UNIT	RESULT
MW91129-1	8794.01	ે ૩.૦	ug/L	26.6
MW91601-1	8794.02	3.Q	ug/L	21.4
MW6024-1	8794.04	3.0	ug/L	10.2
MW6001-1	8794.05	3.0	ug/L	ND
MW4204-1	8794.06	3.0	ug/L	6.9 J
MW4204-1 DUP	8794.07	3.0	ug/L	8.0 T
MW4204-1 MS	8794. 08	3.0	ug/L	16.5
	8794.10	3.0	ug/L	ND
UST-ER1	8 6/34.10	J. U	~g/ #	

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.01

METHOD REFERENCE: EPA 602

DATE SAMPLED : 02-19-92

DATE SUBMITTED: 02-20-92

DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW91129-1

DET.

PARAMETER	LIMER	UNIT	RESULTS
GAS CHROMATOGRAPHY	· (
BENZENE	1.0	ug/L	ND
TOLUENE	1.9	ug/L	ND
	1.0	ug/L	ND
ETHYLBENZENE XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

94%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

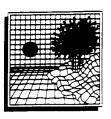
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

B-12



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.01P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.01

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW91129-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND 🌉
ACENAPHTHYLENE	1.0	ND _/
ACENAPHTHENE	1.0	ND T
FLUORENE	1.0	ND 🏅
PHENANTHRENE	1.0	ND
ANTHRACENE	1.0	ND "
FLUORANTHENE	1.0	ND ***
PYRENE	1.0	ND T
BENZO(A)ANTHRACENE	1.0	ND 🧻
CHRYSENE	1.0	ND 🦳
BENZO(B) FLUORANTHENE	1.0	ND T
BENZO(K) FLUORANTHENE	1.0	ND
BENZO(A)PYRENE	1.0	ND 🏋
DIBENZO(A, H) ANTHRACENE/	1.0	ND $\mathcal T$
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G,H,I) PERYLENE	1.0	D J

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 102.3% p-TERPHENYL 88%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

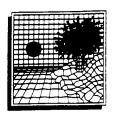
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.02BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.02

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-19-92 DATE SUBMITTED: 02-20-92 DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW91601-1

DET		
	•	

PARAMETER	LINEST	UNIT	RESULTS
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L ug/L	ND ND
TOLUENE ETHYLBENZENE	1.0	ug/L	ND ND
XYLENES MTBE	1.0	ug/L ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

96%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.02P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.02

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: MW91601-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

THE PROPERTY OF THE PROPERTY O	DETECTION LIMIT	RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS		
NAPHTHALENE	1.0	ND 🗸
ACENAPHTHYLENE	1.0	ND J
ACENAPHTHEENE	1.0	ND 🐃
FLUORENE	1.0	ND '
PHENANTHRENE	1.0	ND 7
	1.0	ND T
ANTHRACENE	1.0	ND T
FLUORANTHENE	1.0	NDJ
PYRENE	1.0	ND T
BENZO(A)ANTHRACENE	1.0	ND."
CHRYSENE	1.0	ND 🍜
BENZO (B) FLUORANTHENE	1.0	ND 7
BENZO(K) FLUORANTHENE	1.0	ND 🖫
BENZO(A) PYRENE	1.0	ND J
DIBENZO(A, H) ANTHRACENE/	1.0	ND 🗇
INDENO(1,2,3-CD)PYRENE **	1.0	ND 3
BENZO(G,H,I)PERYLENE	1.0	2.0

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 95.8% p-TERPHENYL 84.8%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.03BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.03

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-19-92
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510
SAMPLE ID: UST-TB1

PARAMETER	LINET	UNIT	RESULTS
GAS CHROMATOGRAPHY		>	
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND

DET -

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 919

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

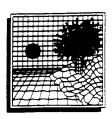
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.04BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.04

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-19-92 DATE SUBMITTED: 02-20-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: MW6024-1

PARAMETER	LIMIT	UNIT	RESULTS
GAS CHROMATOGRAPH	ı x	>	
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES		ug/L	ND
MTBE	1.0	ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

84%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.04P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.04 DATE SUBMITTED: 02-20-92

DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92

METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW6024-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	+ 1.0	ND 🧦
ACENAPHTHYLENE	1.0	ND 🐔
ACENAPHTHENE	1.0	ND T ND T
FLUORENE	1.0	ND
PHENANTHRENE	1.0	ND T
ANTHRACENE FLUORANTHENE	1.0	ND J
PYRENE	1.0	ND 🏅
BENZO(A)ANTHRACENE	1.0	ND.₹
CHRYSENE	1.0	NDJ
BENZO(B) FLUORANTHENE	1.0	ND 7
BENZO(K)FLUORANTHENE	1.0	ND T
BENZO(A)PYRENE	1.0	T DN
DIBENZO(A, H) ANTHRACENE/	1.0	иDJ
INDENO(1,2,3-CD)PYRENE **	1.0	ND J
BENZO(G,H,I)PERYLENE	1.0	

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 76.5% p-TERPHENYL 82.2%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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661



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.05BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.05

METHOD REFERENCE: EPA 602

DATE SAMPLED : 02-19-92

DATE SUBMITTED: 02-20-92

DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW6001-1

D & D & MEMED	LIMET	UNIT	RESULTS
PARAMETER		UNIX	KIBOLID
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.8	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 90%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.05P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.05

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510
SAMPLE ID: MW6001-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	. 1.0	ND $\mathcal J$
ACENAPHTHYLENE	1.0	ND J
ACENAPHTHENE	1.0	ND J
FLUORENE	1.0	ИDJ
PHENANTHRENE	1.0	ND T
ANTHRACENE	1.0	ND 🚏
FLUORANTHENE	1.0	ND 😲
PYRENE	1.0	$\mathtt{ND}\mathcal{T}$
BENZO (A) ANTHRACENE	1.0	ND
CHRYSENE	1.0	ND 🚏
BENZO(B) FLUORANTHERE	1.0	ND 😙
BENZO(K) FLUORANTHENE	1.0	ND :
BENZO(A)PYRENE	1.0	ND J
DIBENZO(A, H) ANTHRACENE/	1.0	ND T
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G,H,I)PERYLENE	1.0	ND 🏹

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 59.1% p-TERPHENYL 57.2%

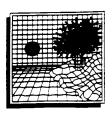
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.06BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.06

METHOD REFERENCE: EPA 602
DATE SAMPLED: 02-19-92
DATE SUBMITTED: 02-20-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW4204-1

PARAMETER		DET.	UNIT	RESULTS
GAS CHROMATO	GRAPHY		<u> </u>	
BENZENE		1.0	ug/L	ND
TOLUENE		1.0	ug/L	ND
ETHYLBENZENE		1.0	ug/L	ND
		1 0	ug/L	ND
XYLENES MTBE		1.0	ug/L	ND
		ÿ		

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 82%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

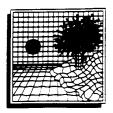
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986

1992



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.06P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.06

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW4204-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND 🦭
ACENAPHTHYLENE	1.0	ND ブ
ACENAPHTHENE	1.0	ND T
FLUORENE	1.0	ND J
PHENANTHRENE	1.0	ND "T"
ANTHRACENE	1.0	ND T
FLUORANTHENE	1.0	ND T
PYRENE	1.0	ND **
	1.0	NDT
BENZO (A) ANTHRACENE	1.0	NDT
CHRYSENE	1.0	ND T
BENZO(B) FLUORANTHENE	1.0	ND 🔭
BENZO(K)FLUORANTHENE	1.0	ND T
BENZO(A) PYRENE	- • -	ND J
DIBENZO(A, H) ANTHRACENE/	1.0	
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G,H,I)PERYLENE	1.0	ND 🧦

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL

74.6%

p-TERPHENYL

80.0%

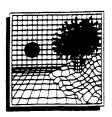
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J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.10BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.10

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-19-92 DATE SUBMITTED: 02-20-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: UST-ER1

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PARAMETER	LIMIT	UNIT	RESULTS
FARMULLA			
GAS CHROMATOGRAPHY			
GAS CHROMATOGAM III			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND
MIDE		•	

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

84%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794.10P

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-20-92

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794.10

DATE SUBMITTED: 02-20-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510
SAMPLE ID: UST-ER1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND J
ACENAPHTHYLENE ACENAPHTHENE	1.0	ND J ND T
FLUORENE PHENANTHRENE	1.0	ир≎
ANTHRACENE FLUORANTHENE	1.0	ND T
PYRENE BENZO(A)ANTHRACENE	1.0 1.0	nd J
CHRYSENE	1.0	ND T
BENZO(B) FLUORANTHENE BENZO(K) FLUORANTHENE	1.0	ND 📜
BENZO(A)PYRENE DIBENZO(A,H)ANTHRACENE/	1.0	ND 🗸
INDENO(1,2,3-CD)PYRENE ** BENZO(G,H,I)PERYLENE	1.0 1.0	ND J.

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 87.9% p-TERPHENYL 99.2%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

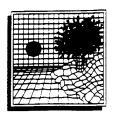
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

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ANALYTICAL REPORT

ENGINEERING-SCIENCE INC. 57 EXECUTIVE PARK SOUTH ATLANTA, GEORGIA 30392

REPORT: 8794

REPORT DATE: 03/13/92

SWLO IDENTIFICATION

SAMPLE NO.:

8794.01-8794.10

DATE RECEIVED:

02/20/92

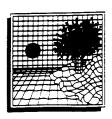
QA/QC

DESCRIPTION PARAMETER RESULTS

BLANK SPIKE 03/04/92 LEAD 96% RECOVERY

MATRIX SPIKE MW204-1 LEAD 48% RECOVERY

DUPLICATE MW204-1 LEAD 14.76% RPD



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794a

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-19-92

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK DATE ANALYZED: 02-24-92

METHOD REFERENCE: EPA 601

PROJECT: AT 510 SAMPLE ID: BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HALOGENATED **VOLATILES**

DET. LIMIT

RESULTS

1,2-DICHLOROETHANE

1.0

ND

OA/OC SURROGATE RECOVERIES

CIS-1,2-DICHLOROETHENE (65%-135%)

94%

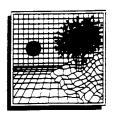
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J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

RECULT BUILD TO THE



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794b

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-19-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO # 8794.08 - .09 (MS/MSD)
DATE ANALYZED : 02-24-92
METHOD REFERENCE: EPA 601

PROJECT: AT 510

SAMPLE ID: MW4202-1 (MS/MSD)

HALOGENATED VOLATILES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE	SAMPLE	,884,	MS	AMT FOUND		
	COMC.	CONC.	MS CONC.	PERCENT			
COMPOUND	(ug/L)	(ug/L)	(ug/L)	RECOVERY	(ug/L)	MSD	RPD
1,2-DICHLOROETHANE	20.0	0	17.2	86.0	18.4	92.0	6.7

SURROGATE RECOVERIES

MS CIS-1,2-DICHLOROETHENE 100%
MSD CIS-1,2-DICHLOROETHENE 97%

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794c

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 602 DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: BLANK

	des.	***	
PARAMETER	LIMER	UNIT	RESULTS
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	10.0	ug/L	ND
	ON/OC SURROG	ATE RECOVERIES	
11700000			

4-BROMOFLUOROBENZENE (65-135%) 86%

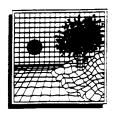
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

= SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



MTBE

SOUTHWEST LABORATORY OF OKLAHOMA, INC.

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794d

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

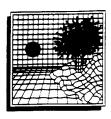
SAMPLE MATRIX: WATER DATE ANALYZED: 02-21-92 SWLO #: 8794 (MS/MSD)

PROJECT: AT 510 SAMPLE ID: MW4204-1

BTEX MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		MATRIX S	PIKE
	SPIKE CONC. SI (ug/L)	AMPLE CONC. (ug/L)	conc.	PERCENT RECOVERY
BENZENE	10.0	0	9.9	99.3%
TOLUENE	10.0	0.//	9.3	93.1%
ETHYLBENZENE	10.0	0	9.4	94.4%
TOTAL XYLENES	<i>3</i> 0.0	0	29.4	98.1%
MTBE	40.0	0	44.6	111.5%
	MATRIX SPIKE DUI NSD CONC. (ug/L)		REC.	RECOVERY PERCENT DIFFERENCE
BENZENE	10.1	100.9%		1.60%
TOLUENE	9.5	95.4%		2.44%
ETHYLBENZENE	9.8	98.0%		3.74%
TOTAL XYLENES	30.4	101.3%		3.21%
MTRE	42.4	106.0%		5.1%





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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794e

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 504.1
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

Det

PARAMETER LIM

RESULT

ETHYLENE DIBROMIDE

0.01

ND

OA/OC SURROGATE RECOVERY

1,1,2,2-TETRACHLOROETHANE 103%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION 

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794f

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8794 LCS PROJECT: AT 510

LABORATORY CONTROL SPIKE

SPIRE CONC. (ug/L)

CONTROL SAMPLE CONC. (ug/L)*

0

(ug/L)*

LCS CONC. LCS PERCENT RECOVERY

ETHYLENE DIBROMIDE

1.67

101.5%

= DILUTION FACTOR NOT APPLIED TO THESE CONCENTRATIONS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794g

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO # 8794.08 - .09 (MS/MSD)
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-25-92
METHOD REFERENCE: EPA 601

PROJECT: AT 510

SAMPLE ID: MW4202-1 (MS/MSD)

ETHYLENE DIBROMIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

		SPIKE	SAMPLE CONC.		MS	AMT FOUND		
		comc.	CONC.	MS CONC.	PERCENT		RECOVERY	
COMPOUND				(ug/L)	RECOVERY	(ug/L)	MSD	RPD
	BROMI DE	1.67	0	1.62	97	1.80	108	11

SURROGATE RECOVERIES

MS CIS-1,2-DICHLOROETHENE 106%
MSD CIS-1,2-DICHLOROETHENE 121%

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794h

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE EXTRACTED: 02-28

DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: WBLK022892-01

RESULTS REPORTED IN ug/l OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	ETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND
ACENAPHTHYLENE	* 1.0	ND
ACENAPHTHENE	1.0	ND
FLUORENE	1.0	ND
PHENANTHRENE	1.0	ND
ANTHRACENE	1.0	ND
FLUORANTHENE	1.0	ND
PYRENE	1.0	ND
BENZO(A)ANTHRACENE	1.0	ND
CHRYSENE	1.0	ND
BENZO(B) FLUORANTHENE	1.0	ND
	1.0	ND
BENZO(K) FLUORANTHENE	1.0	ND
BENZO(A) PYRENE	1.0	ND
DIBENZO(A, H) ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **		
BENZO(G,H,I)PERYLENE	1.0	ND

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL

90.7%

p-TERPHENYL

78.6%

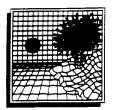
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J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: 8794 (MS/MSD) DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-06-92

PROJECT: AT 510

SAMPLE ID: MW4204-1 (MS/MSD)

REPORT: 8794i

DATE: 03-20-92

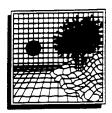
WATER PAH MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE ADDED	AMT FOUND	MS	PERCENT	AMT FOUND	PERCENT RECOVERY	
COMPOUND	(ug/1)	(ug/1)	(ug/1)	RECOVERY	(ug/1)	MSD	RPD
NAPTHALENE	10.0	6	7 . 6	76.2	10.6	106.2	33.0
ACENAPTHYLENE	10.0	6 0	7.9	79.0	10.8	108.0	30.9
ACENAPTHENE	10.Q	o	7. 9	78.8	10.8	107.9	31.1
FLUORENE	10.0	0	8.6	85.9	11.9	119.4	32.6
PHENANTHRENE	1 0. 0	0 💰	8.6	86.4	12.1	121.2	33.6
ANTHRACENE	10,0	0	8.7	87.4	11.9	118.5	30.3
FLUORANTHENE	10.0	Q	8.4	84.1	11.5	115.4	31.4
PYRENE	10.0	0	8.4	84.2	11.7	117.4	32.9
BENZO-(A)-ANTHRANCENE	10.0	0	7.5	75.2	9 .9	99.1	27.5
CHRYSENE	10.0	0	7.0	70.1	9.3	93.4	28.5
BENZO-(B)-FLUORANTHENE	10.0	0	8.1	81.1	10.8	107.7	28.2
BENZO-(K)-FLUORANTHENE	10.0	0	8.4	84.2	11.3	113.2	29.4
BENZO-(A)-PYRENE	10.0	0	8.4	84.2	11.1	110.6	27.1
DIBENZO(A, H) ANTHRACENE,		0	8.3	41.3	11.7	. 58.5	34.5
INDENO(1,2,3-CD)PYRE							
BENZO(G,H,I)PERYLENE	10.0	0	8.4	83.9	12.0	119.5	35.1

OA/OC SURROGATE RECOVERIES

MSD MS 106.7% 76.7% 2-FLUOROBIPHENYL 110.0% 91.7% p-TERPHENYL

*VALUES OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794j

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE ANALYZED : 02-25-92

METHOD REFERENCE: EPA 418.1 PROJECT: AT 510

SAMPLE ID: WBLK02249201

RESULTS REPORTED IN mg/L OR Parts Per Billion (PPB)

DET.

PARAMETER

LIMIT RESULTS

0.5 ND

TPH

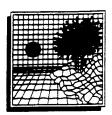
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

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1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2858

CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8794k

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-25-92
SWLO #: 8794 (MS/MSD)

PROJECT: AT 510 SAMPLE ID: MW4204-1

TPH MATRIX SPIKE MATRIX SPIKE DUFFLICATE

SPIKE CONC. SAMPIR CONC. CONC. PERCENT
(ug/L) (ug/L) (ug/L) RECOVERY

TPH 31.0 0 25.1 81.0%

RECORD ROLL TO BE SEED

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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

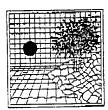
SAMPLE MATRIX: WATER DATE ANALYZED: 02-25-92 SWLO #: 8794 (MS/MSD)

PROJECT: AT 510 SAMPLE ID: MW4204-1 REPORT: 8794k

DATE: 03-20-92

TPH MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	SPIRE CONC. (ug/L)	SAMPLE CONC.	MATRIX SPIKE CONC. (ug/L)	PERCENT RECOVERY	
ТРН	31.0	0	25.1	81.0%	
	MSD CONC. (ug/L)*	MSD PERCENT RECOVERY		(PERCENT ERENCE	
ТРН	27.9	90%	1	10.6%	



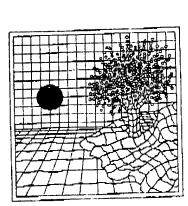
FAX NUMBER 918-251-2599

FAX COVER SHEET

DATE: 3-26-92

T@:	NAME:	Inde d	Satton	
201	CLIENT:	Rejneering	Science	Inc.
	SUBJECT:	Parreci		
	FAX #	1-404 -	325 - 8	369
FROM:	NAME:	Daryl	Alstatt	
0 94-544-1	LABORATORY:	5	WLO	
COMMENTS:	For your comm Please call me Information only	ents about this	As you a As we d Review a	requested liscussed and forward
number of pages:	3(Inclu	iding this cove	er page)	
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	ve any problems wit			
please ca			at	(918)251-2858



March 26, 1992

Ola Awosika ENGINEERING SCIENCE, INC. 57 Executive Park South, Suite 590 Atlanta, GA 30329

Project: AT 510 SWLO Episode #: 8794.01 - 8794.10

Dear Mr. Awosika:

Enclosed we are submitting the corrected TPH MS/MSD report for your samples received in our laboratory on February 20, 1992 for the above-captioned project. We regret any inconvenience this may have caused.

If, in your review, you should have any questions or require additional information, please call.

Sincerely,

Mark A La

Daryl Alstatt Project Officer

DA/rb

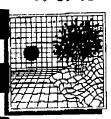
Enclosures

SUUTHWEST LAB

(を) ()(り)

REPORT: 8794k

DATE: 03-20-92



SOUTHWEST LABORATORY OF OKLAHOMA, INC. 1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2858

CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER DATE ANALYZED: 02-25-92 SWLO #: 8794 (MS/MSD)

PROJECT: AT 510 SAMPLE ID: MW4204-1

TPH MATRIX SPIKE MATRIX SPIKE DUPLICATE

	SPIKE CONC. (ug/L)	SAMPLE CONC.	conc.	Percent Recovery	
ТРН	31.0	0	25.1	81.0%	
	MSD CONC. (ug/L)*	MSD PERCENT RECOVERY		RY PERCENT PERENCE	
TDH	27.9	90%		10.6%	

ANALYTICAL DATA BATCH 8803

MEMORANDUM

March 30, 1992

To:

File

From:

J. A. Banton

Subject:

Eglin AFB, Job No. AT510.04

Data Review, UST Sites

Batch 8803

TPH (E418.1) analyses met QA/QC criteria for holding times, blanks, and matrix spike/matrix spike duplicates.

BETX and MTBE (E602) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries. Samples MW3021-1 and UST-ER2 had positive results that were not confirmed by a second column analysis. These positive results were flagged "JN" due to this problem. Benzene results failed to meet USAF maximum allowable detection limits; however, the detection limits did meed Florida petroleum contamination site cleanup criteria maximum allowable detection limits.

EDB (E504) analyses met QA/QC criteria for holding times, LCS, matrix spike/matrix spike duplicate, and surrogate recoveries.

Lead analyses met QA/QC criteria for holding times and matrix spike/matrix spike duplicates.

1,2-DCE (E601) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries.

AT510\923J189

Memorandum to File Page 2 March 30, 1992

PAH (E610) analyses met criteria for blanks and surrogate recoveries. Samples MW3021-1, MW981-1, MW981-1, MW792-1, and UST-ER2 exceeded holding time criteria. All compounds in the associated samples were flagged to this problem.

ENGINEERING-SCIENCE, INC.

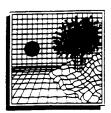
J. A. Banton

Chemist, ES Atlanta

ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

ES JOB NO.		PROJECT NAME/LOCATION		PRESERVATIVE DECUMEN		
AT510.04		Folin AFB Just sites			Southwest Lax	
SAMPLER(S): (Bignature)	5); (8lgmentu		ANALYBES NEO	NEOUNED		
7	Hon A	Suverez				
DATE .	TIME	SAMPLE DESCRIPTION OF CONTARES		// MATTREX	REMARKS	
2-20-92 08	5880	MW3021-1	XXXXXXX	wate	Andrike Method	
21	1005	UST- TB2 Trip Black 2	X X X X	\		
2	1015	1-18bmw	XXXXXXXX		0805ws	14.40
	1125	9 1- 262~W	XXXXXXX		5 w Sc 30	01% [5
2	3000	WST - FR2	XXXXXX	1	E504	-
					MT8/ 5030	
					l	
		B C C B 1 7000 MAR 2 3 1992				
Relinquished by: (Signature)	by: (elon		Deta/Time	Remarks:		
Non Surony	Suvency	200 C	0010 16/17/ca	Airbill &	1833686735	
			1 1			

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05HV

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803.01 - .05
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-24-92

PROJECT: AT 510

METHOD REFERENCE FOR 1,2-DICHLOROETHARE: EPA 601

	SWLO DET		
CLIENT ID	I.D LIM	IT UNIT	RESULT
MW3021-1	8803.01 1.0	ug/L	ND
UST-TB2	8803.02 1.0	ug/L	ND
MW981-1	8803.03 1.0	ug/L	ND
MW792-1	8803.04 1.0	ug/L	ND
UST-ER2	8803.05 1.0	ug/L	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05HVS

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SWLO # 8803

METHOD REFERENCE: EPA 601

PROJECT: AT 510

HALOGENATED VOLATILE QA/QC SURROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
SAMPLE I.B.		}
8803.01	CIS-1,2-DICHLOROETHENE	106%
8803.02	CIS-1,2-DICHLOROETHENE	100%
8803.03	CIS-1,2-DICHLOROETHENE	97%
8803.04	CIS-1,2-DICHLOROETHENE	105%
8803.05	CIS-1,2-DICHLOROETHENE	94%
••••		

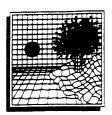


D = SURROGATE DILUTED OUT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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REPORT: 8803.01 - .05EDB

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: 8803.01 - .05

METHOD REFERENCE: EPA 504.1
DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-24-92
DATE ANALYZED: 02-25-92

PROJECT: AT 510

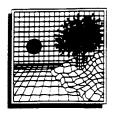
RESULTS REPORTED IN ug/L or PARTS PER BILLION

EFRYLENE DIBROMIDE

	SWLO	DET.	
CLIENT ID	I.D	LIMIT	RESULTS
MW3024-1	8803.01	0.01	ND
UST-TB2	8803.02	0.01	ND
MW981-1	8803.03	0.01	ND
MW792-1	8803.04	0.01	ND
UST-ER2	8803.05	0.01	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05EDBSR

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

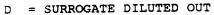
SWLO # 8803

METHOD REFERENCE: EPA 504.1

PROJECT: AT 510

ETHYLENE DIBROMIDE QA/QC SUBROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8803.01	1,1,2,2-TETRACHLOROETHANE	109%
8803.02	1,1,2,2-TETRACHLOROETHANE	109%
8803.03	1,1,2,2-TETRACHLOROETHANE	110%
8803.04	1,1,2,2-TETRACHLOROETHANE	110%
8803.05	1,1,2,2-TETRACHLOROETHANE	108%
	3.00° and the second of the second of the second of the second of the second of the second of the second of the	

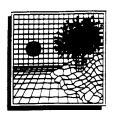


J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

W. 1. 1. 20 . 13 . 3 . 3 . 1892



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05LD

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803.01 - .05
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 03-04-92

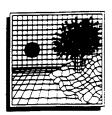
PROJECT: AT 510

METHOD REFERENCE FOR LEAD: EPA 239.2

	SWLO DET.	•	
CLIENT ID	I.D DIMIT	UNIT	RESULT
MW3021-1	8803.01 3.0	ug/L	ND
MW981-1	8803.03 3.0	ug/L	5.4
MW792-1	8803.04 3.0	ug/L	142
UST-ER2	8803.05 3.0	ug/L	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION Section of the last of the las



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01 - .05TPH

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803.01 - .05
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-25-92

PROJECT: AT 510

METHOD REFERENCE FOR TOTAL PETROLEUM HEDROCARBON: EPA 418.1

	SWLO DET.		
CLIENT ID	I.D LIMIT	UNIT	RESULT
MW3021-1	8803.01 0.5	mg/L	ND
MW981-1	8803.03 0.5	mg/L	0.6
MW792-1	8803.04 0.5	mg/L	ND
UST-ER2	8803.05 1.0	mg/L	ND
	. **		

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.01

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-20-92 DATE SUBMITTED: 02-21-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: MW3021-1

PARAMETER	LINET	UNIT	RESULTS
GAS CHROMATOGRAPHY	1.0		
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	0.5 J
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND

DET.

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

82%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

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REPORT: 8803.01P

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

DATE: 03-20-92

SAMPLE MATRIX: WATER

SWLO #: 8803.01

DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510
SAMPLE ID: MW3021-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

	*	
POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND 🖑
ACENAPHTHYLENE	1.0	ND 🖑
ACENAPHTHENE	1.0	ND T
FLUORENE	1.0	ND ~
PHENANTHRENE	1.0	ND 4
	1.0	ND >
ANTHRACENE	1.0	2.0
FLUORANTHENE	1.0	ND J
PYRENE	=	•
BENZO(A)ANTHRACENE	1.0	ND J
CHRYSENE	1.0	ND 🗇
BENZO(B) FLUORANTHENE	1.0	ND Ţ
BENZO(K) FLUORANTHENE	1.0	ИDŢ
BENZO(A) PYRENE	1.0	ND T
DIBENZO(A, H) ANTHRACENE/	1.0	NDJ
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G,H,I)PERYLENE	1.0	ND 5
RENZUIGIRITIFERILENE	2.0	3. - •

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 82.6% p-TERPHENYL 72%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

8-50

3 3 1992



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.01PC

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

CON firm of

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.01

DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-19-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510
SAMPLE ID: MW3021-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARSONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	* 2.8	ND J
ACENAPHTHYLENE	3.6	ирД,
ACENAPHTHENE	4.3	NDT
FLUORENE	0.3	ND
PHENANTHRENE	0.9	ND T
	1.1	ND T
ANTHRACENE	0.3	ND T
FLUORANTHENE	• • •	<u>~</u>
PYRENE	0.5	ND ₹
BENZO (A) ANTHRACENE	0.02	$ND\mathcal{J}$
CHRYSENE	0.2	ИDŢ
BENZO(B) FLUORANTHENE	0.03	nd T
BENZO(K)FLUORANTHENE	0.03	ND 🏹
	0.03	ND 🖑
BENZO(A) PYRENE	0.05	мDĴ
DIBENZO(A, H) ANTHRACENE/	****	
INDENO(1,2,3-CD)PYRENE **	0.08	NDJ
BENZO(G,H,I)PERYLENE	0.12	ND T

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL	48%
p-TERPHENYL	36%

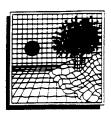
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.02BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.02

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-20-92
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510
SAMPLE ID: UST-TB2

DET.	

PARAMETER	LIME	UNIT	RESULTS
	•		
GAS CHROMATOGRAPI	нү		
GAD CIMOINITEGE			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND
MIDE		.	

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 86%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

= ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986

3-52



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.03BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.03

METHOD REFERENCE: EPA 602
DATE SAMPLED : 02-20-92
DATE SUBMITTED: 02-21-92
DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: MW981-1

PARAMETER		LIME	UNIT	RESULTS
GAS CHROMATO	GRAPHY		•	
BENZENE	w .	1.0	ug/L	ND
TOLUENE		1.0	ug/L	ND
ETHYLBENZENE	:	1.0	ug/L	ND
XYLENES		1.0	ug/L	ND
MTBE		1.0	ug/L	ND

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%) 87%

...

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

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EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.03P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.03

DATE SUBMITTED: 02-21-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW981-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	<u>results</u>	
NAPHTHALENE	1.0	NDJ	
ACENAPHTHYLENE	1.0	ND	
ACENAPHTHENE	1.0	ND	
FLUORENE	1.0	NDJ	
PHENANTHRENE	1.0	ÇDN	
ANTHRACENE	1.0	ND.	
FLUORANTHENE	1.0	ND 🤔	
PYRENE	1.0	ND.	
BENZO(A)ANTHRACENE	1.0	ND Z	
CHRYSENE	1.0	ND 🛴	- 3
BENZO(B)FLUORANTHENE	1.0	ND	· .
BENZO(K) FLUORANTHENE	1.0	$\mathtt{ND} \mathbb{T}$	•
BENZO(A) PYRENE	1.0	ND 🛴	4.
DIBENZO(A, H) ANTHRACENE/	1.0	NDT	"°r
INDENO(1,2,3-CD)PYRENE **	1.0	NDJ	cu
BENZO(G,H,I) PERYLENE	1.0	ND ₹	ye ye paten

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL p-TERPHENYL 106.7%

p-1ERI IIERI

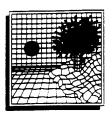
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.04BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.04

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-20-92 DATE SUBMITTED: 02-21-92 DATE ANALYZED:

PROJECT: AT 510 SAMPLE ID: MW792-1

PARAMETER	LINET	UNIT	RESULTS
GAS CHROMATOGRAPHY		×	
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
909		ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	49/-	

OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.04P

57 EXECUTIVE PARK SOUTH, SUITE 590 ATLANTA, GA 30329

DATE: 03-20-92

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.04

DATE SUBMITTED: 02-21-92 DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-06-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: MW792-1

RESULTS REPORTED IN ug/ OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND T
ACENAPHTHYLENE	1.0	ND ブ
ACENAPHTHENE	1.0	NDJ
FLUORENE	1.0	ND 📆
PHENANTHRENE	1.0	ND 🏋
ANTHRACENE	1.0	NDT
FLUORANTHENE	1.0	ND T
₹ = : : : : : : : : : : : : : :	1.0	ND T
PYRENE BENZO(A)ANTHRACENE	1.0	NDJ
CHRYSENE	1.0	ND
BENZO(B) FLUORANTHENE	1.0	NDŢ
BENZO(K) FLUORANTHENE	1.0	ND "
	1.0	ND T
BENZO(A) PYRENE DIBENZO(A, H) ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **	1.0	NDC
BENZO(G,H,I)PERYLENE	1.0	ND ブ

OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL p-TERPHENYL

103.0% 105.7%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

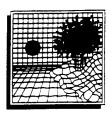
J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).

B-56



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.05BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.05

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-20-92 DATE SUBMITTED: 02-21-92 DATE ANALYZED: 02-21-92

PROJECT: AT 510 SAMPLE ID: UST-ER2

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PARAMETER	LIMIT	UNIT	RESULTS
GAS CHROMATOGRAPHY	1		
BENZENE TOLUENE ETHYLBENZENE XYLENES MTBE	1.0 1.0 1.0 1.0 1.0	ug/L ug/L ug/L ug/L ug/L	ND ND ND O.7 J

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

82%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

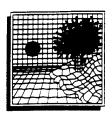
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SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986

::3 3



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803.05P

57 EXECUTIVE PARK SOUTH, SUITE 590

30329 ATLANTA, GA

DATE: 03-20-92

3

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8803.05

DATE SUBMITTED: 02-21-92 DATE EXTRACTED: 02-28-92 DATE ANALYZED: 03-06-92 METHOD REFERENCE: EPA 610

PROJECT: AT 510 SAMPLE ID: UST-ER2

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND ブ
ACENAPHTHYLENE	1.0	NDJ
ACENAPHTHENE	1.0	NDJ
FLUORENE	1.0	NDJ
PHENANTHRENE	1.0	NDJ
ANTHRACENE	1.0	ND 🗇
FLUORANTHENE	1.0	ND 🕇
PYRENE	1.0	ND 🏋
BENZO(A)ANTHRACENE	1.0	ND J.
CHRYSENE	1.0	NDŢ
BENZO(B)FLUORANTHENE	1.0	ND 🏋
BENZO(K)FLUORANTHENE	1.0	ND 🝈
BENZO(A) PYRENE	1.0	ND T
DIBENZO(A, H) ANTHRACENE/	1.0	ND "
INDENO(1,2,3-CD)PYRENE **	1.0	ND T
BENZO(G,H,I)PERYLENE	1.0	ND 📆

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL	105.7%
p-TERPHENYL	106.6%

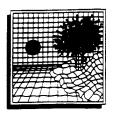
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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#### ANALYTICAL REPORT

ENGINEERING-SCIENCE INC. 57 EXECUTIVE PARK SOUTH ATLANTA, GA 30329 REPORT: 8803

REPORT DATE: 03/16/92

SWLO IDENTIFICATION

SAMPLE NO.:

8803.01-8803.05

DATE RECEIVED: 02/21/92

OA/OC

DESCRIPTION

PARAMETER

RESULTS

METHOD BLANK

03/04/92

LEAD

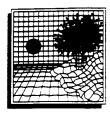
< 3.0 ug/L

BLANK SPIKE

03/04/92

LEAD

96% RECOVERY



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803a

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-19-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

AIIN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE ANALYZED : 02-24-92
METHOD REFERENCE: EPA 601

PROJECT: AT 510 SAMPLE ID: BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HALOGENATED VOLATILES

DET.. LIMIT

RESULTS

1,2-DICHLOROETHANE

1.0

ND



CIS-1,2-DICHLOROETHENE (65%-135%) 94%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803b

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO # 8803 (MS/MSD)
DATE ANALYZED: 02-24-92
METHOD REFERENCE: EPA 601

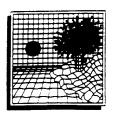
PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### HALOGENATED VOLATILES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE	SAMPLE			AMT FOUND		
	COMC.	CONC.	MS CONC.	PERCENT	MSD CONC.	RECOVERY	PERCENT
COMPOUND	(ug/L)	(ug/L)	MS CONC.	RECOVERY	(ug/L)	MSD	RPD
1,2-DICHLOROETHANE	20.0	0	17.2	86.0	18.4	92.0	6.7

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803c

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
METHOD REFERENCE: EPA 602
DATE ANALYZED: 02-21-92

PROJECT: AT 510
SAMPLE ID: BLANK

	DETE.	Ÿ	
PARAMETER	LIMIT	UNIT	RESULTS
GAS CHROMATOGRAPHY		<b>\</b>	
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	10.0	ug/L	ND
	ON ACC SUPPOR	GATE RECOVERIES	
	UA/OC SURRO	JALE RECOVERIES	

4-BROMOFLUOROBENZENE (65-135%)

86%

RECEITED

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

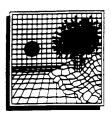
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-21-92
SWLO #: 8803 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

DATE: 03-20-92

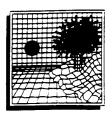
REPORT: 8803d

#### BTEX MATRIX SPIKE MATRIX SPIKE DUPLICATE

	SPIKE CONC.	SAMPLE CONC. (ug/L)	MATRIX SPIR CONC. (ug/L)	e Percent Recovery	<u></u>
	10.0	0	9.9	99.3%	
BENZENE TOLUENE	10.0	Q.	9.3	93.1%	
ETHYLBENZENE		o o	9.4	94.4%	
TOTAL XYLENES	30.0	0	29.4	98.1%	
MTBE	30.0 40.0	0	44.6	111.5%	

	MATRIX SPIKE DUP NSD CONC. (ug/L)	PERCENT REC. (ug/L)	RECOVERY PERCENT DIFFERENCE	
BENZENE	10.1	100.9%	1.60%	
TOLUENE	9.5	95.4%	2.44%	
ETHYLBENZENE	9.8	98.0%	3.74%	
TOTAL XYLENES	30.4	101.3%	3.21%	
MTBE	42.4	106.0%	5.1%	

RECE



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57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

REPORT: 8803e

DATE: 03-20-92

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 504.1 DATE EXTRACTED: 02-24-92 DATE ANALYZED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

RESULT

ETHYLENE DIBROMIDE

PARAMETER

ND

OA/OC SURROGATE RECOVERY

1,1,2,2-TETRACHLOROETHANE

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985SM = STANDARD METHOD, 16TH EDITION 

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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803f

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-19-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: METHOD WATER BLANK 022892-01

RESULTS REPORTED IN ug/l OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS DET	ECTION LIMIT	RESULTS
NAPHTHALENE	2.9	ND
ACENAPHTHYLENE	3.7	ND
ACENAPHTHENE	4.5	ND
FLUORENE	0.3	ND
PHENANTHRENE	1.0	ND
ANTHRACENE	1.1	ND
FLUORANTHENE	0.3	ND
PYRENE	0.5	ND
BENZO(A)ANTHRACENE	0.02	ND
CHRYSENE	0.2	ND
BENZO(B) FLUORANTHENE	0.03	ND
BENZO(K) FLUORANTHENE	0.03	ND
BENZO(A) PYRENE	0.03	ND
DIBENZO(A, H) ANTHRACENE/	0.05	ND
INDENO(1,2,3-CD)PYRENE **	0.08	ND
BENZO(G, H, I) PERYLENE	0.13	ND

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL	50%
p-TERPHENYL	43%

ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803g

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92

PROJECT: AT 510

SAMPLE ID: WBLK022892-01

METHOD REFERENCE: EPA 610

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS	BETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND
ACENAPHTHYLENE ACENAPHTHENE	1.0	ND ND
FLUORENE PHENANTHRENE	1.0 1.0	ND ND
ANTHRACENE	1.0	ND ND
FLUORANTHENE PYRENE	1.0 1.0	ND
BENZO(A)ANTHRACENE CHRYSENE	1.0 1.0	ND ND
BENZO(B)FLUORANTHENE	1.0 1.0	ND ND
BENZO(K) FLUORANTHENE BENZO(A) PYRENE	1.0	ND
DIBENZO(A, H) ANTHRACENE/ INDENO(1,2,3-CD) PYRENE **	1.0 1.0	ND ND
BENZO(G,H,I)PERYLENE	1.0	ND

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL 90.7% p-TERPHENYL 78.6%

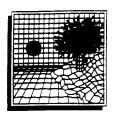
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B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8803 (MS/MSD)

DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

REPORT: 8803h

DATE: 03-20-92

#### WATER PAH MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE ADDED	AMT FOUND	ANT FOUND	MS PERCENT	AMT FOUND	PERCENT RECOVERY	PERCENT
COMPOUND	(ug/1)	(ug/1)	(ug/1)	RECOVERY	(ug/1)	MSD	RPD
							<u></u>
NAPTHALENE	10.0	ಂ	7.6	76.2	10.6	106.2	33.0
ACENAPTHYLENE	10.0	0	7.9	79.0	10.8	108.0	30.9
ACENAPTHENE	10.0	σ	7.9	78.8	10.8	107.9	31.1
FLUORENE	10.0	0	8.6	85.9	11.9	119.4	32.6
PHENANTHRENE	10.0	o (	8.6	86.4	12.1	121.2	33.6
ANTHRACENE	10.0	O.	8.7	87.4	11.9	118.5	30.3
FLUORANTHENE	10.0	.0	8.4	84.1	11.5	115.4	31.4
PYRENE	10.0	0	8.4	84.2	11.7	117.4	32.9
BENZO-(A)-ANTHRANCENE	10.0	0	7.5	75.2	9.9	99.1	27.5
CHRYSENE	10.0	0	7.0	70.1	9.3	93.4	28.5
BENZO-(B)-FLUORANTHENE	10.0	0	8.1	81.1	10.8	107.7	28.2
BENZO-(K)-FLUORANTHENE	10.0	0	8.4	84.2	11.3	113.2	29.4
BENZO-(A)-PYRENE	10.0	0	8.4	84.2	11.1	110.6	27.1
DIBENZO(A, H) ANTHRACENE/		Ö	8.3	41.3	11.7	58.5	34.5
INDENO(1,2,3-CD)PYREN		-		<u> </u>			
BENZO(G, H, I) PERYLENE	10.0	0	8.4	83.9	12.0	119.5	35.1

#### OA/OC SURROGATE RECOVERIES

*VALUES OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803i

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE ANALYZED : 02-25-92
METHOD REFERENCE: EPA 418.1

PROJECT: AT 510

TPH

SAMPLE ID: WBLK02249201

RESULTS REPORTED IN mg/L OR Pages Per Billion (PPB)

DET.

PARAMETER

LIMIT RESULTS

0.5 ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8803k

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-25-92
SWLO #: 8803 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### TPH MATRIX SPIKE MATRIX SPIKE DUPLICATE

	SPIKE CONC. (ug/L)	SAMPLE CONC. (ug/L)	MATRIX SPIK CONC. (ug/L)	PERCENT RECOVERY	
ТРН	20.0	0	15.6	78.0%	
	MSD CONC. (mg/L)*	MSD PERCENT RECOVERY		Y PERCENT FERENCE	
TPH	16.0	80%		2.5%	

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ANALYTICAL DATA BATCH 8819

#### MEMORANDUM

March 30, 1992

To:

File

From:

J. A. Banton

Subject:

Eglin AFB, Job No. AT510.04

Data Review, UST Sites

Batch 8819

TPH (E418.1) analyses met QA/QC criteria for holding times, blanks, and matrix spike/matrix spike duplicate.

BETX and MTBE (E602) analyses met QA/QC criteria for holding times, blanks, matrix spike/matrix spike duplicate, and surrogate recoveries. Benzene results failed to meet USAF maximum allowable detection limits; however, the detection limits did meet Florida petroleum contamination site clean-up criteria maximum allowable detection limits.

EDB (E504) analyses met QA/QC criteria for holding times, LCS, matrix spike/matrix spike duplicate, and surrogate recoveries.

Lead analyses met QA/QC criteria for holding times and matrix spike/matrix spike duplicates.

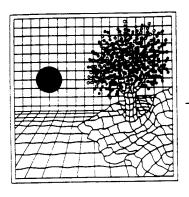
1,2-DCE (E601) analyses met QA/QC criteria for holding times, blanks, matrix spike/spike matrix duplicate, and surrogate recoveries.

PAH (E610) analyses met criteria for holding times, blanks, and surrogate recoveries.

ENGINEERING-SCIENCE, INC.

J. A. Banton

Chemist, ES Atlanta



March 20, 1992

Ola Awosika
ENGINEERING SCIENCE, INC.
57 Executive Park South, Suite 590
Atlanta, GA 30329

Project: AT 510 SWLO Episode #: 8819.01 - 8819.02

Dear Mr. Awosika:

Enclosed we are submitting the analytical results for your samples received in our laboratory on February 22, 1992 for the above-captioned project.

If, in your review, you should have any questions or require additional information, please call.

Sincerely,

Dol Alter

Daryl Alstatt Project Officer

DA/rb

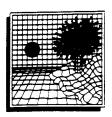
Enclosures

1700 WEST ALBANY • BROKEN ARROW, OK 74012 (918) 251-2858 • FAX (918) 251-2599

# ENGINEERING-SCIENCE CHAIN OF CUSTODY RECORD

Ш	ES JOB NO.		PROJECT NAMEALOCATION				-	PRESERVATIVE REQUIRED	TWE REG	UBBED	24.0510	
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		(Now)	Mos Burrary							<u></u>		
<u></u>	DATE	<b>TRACE</b>	SAMPLE DESCRIPTION	NOTAN	CONTABLES		SIP PS	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF		MATTREX	2	PEBAARICE
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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01 - .02HV

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA DATE: 03-19-92

SAMPLE MATRIX: WATER
SWLO #: 8819.01 - .02
DATE SUBMITTED: 02-22-92
DATE ANALYZED: 02-26-92

PROJECT: AT 510

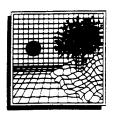
METHOD REFERENCE FOR 1,2-DICHLOROETHAME: EPA 601

	SWLO DET.		
CLIENT ID	I.D LIMIT	UNIT	RESULT
MW9990-1	8819.01 . 1.0	ug/L	ND
UST-TB3 TRIP	BLANK 8819.02 1.0	ug/L	ND



ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01 - .02HVS

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SWLO # 8819

METHOD REFERENCE: EPA 601

PROJECT: AT 510

#### HALOGENATED VOLATILE QA/QC SURROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
		<b>&gt;</b>
8819.01	CIS-1,2-DICHLOROETHENE	96%
8819.02	CIS-1,2-DICHLOROETHENE	94%

D = SURROGATE DILUTED OUT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01 - .02EDB

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: 8819.01 - .02

METHOD REFERENCE: EPA 504.1

DATE SUBMITTED: 02-22-92

DATE EXTRACTED: 02-24-92

DATE ANALYZED: 02-25-92

PROJECT: AT 510

RESULTS REPORTED IN ug/L or PARTS PER BILLION

#### ETHYLENE DIBROMIDE

	SWLO	DET.	
CLIENT ID	I.D	LIMIT	RESULTS
мw99 <del>9</del> 0-1	8819.01	0.01	ND
MW91601-1	8819.02	0.01	ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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CLIENT: ENGINEERING SCIENCE, INC.

**REPORT:** 8819.01 - .02EDBSR

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

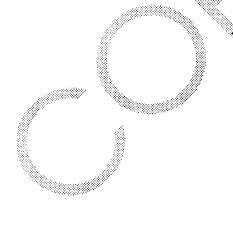
SWLO # 8819

METHOD REFERENCE: EPA 504.1

PROJECT: AT 510

#### ETHYLENE DIBROMIDE QA/QC SURROGATE RECOVERIES

SAMPLE I.D.	COMPOUND	PERCENT RECOVERY
8819.01	1,1,2,2-TETRACHLOROETHANE	109%
8819.02	1,1,2,2-TETRACHLOROETHANE 1,1,2,2-TETRACHLOROETHANE	112%

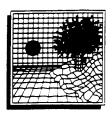


D = SURROGATE DILUTED OUT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01TPH

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.01

DATE SUBMITTED: 02-22-92 DATE ANALYZED: 03-04-92

PROJECT: AT 510

METHOD REFERENCE FOR TOTAL PETROLEUM HYDROCARBON: EPA 418.1

	SWLO DET.		
CLIENT ID	I.D SIMIT	UNIT	RESULT
MW9990-1	8819.01 1.0	mg/L	1.6

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION

A. Land



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01LD

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.01

DATE SUBMITTED: 02-22-92
DATE ANALYZED: 03-04-92

PROJECT: AT 510

METHOD REFERENCE FOR LEAD: EPA 239.2

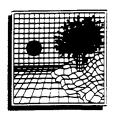
SWLO DET.

CLIENT ID I.D LIMIT UNIT RESULT

MW9990-1 8819.01 3.0 ug/L ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION



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ENGINEERING SCIENCE, INC. CLIENT:

REPORT: 8819.01BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

30329 ATLANTA, GA ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.01

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-21-92 DATE SUBMITTED: 02-22-92 DATE ANALYZED: 02-25-92

PROJECT: AT 510 SAMPLE ID: MW9990-1

	DET.	UNIT	RESULTS
PARAMETER	LIMIN	UNIX	
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND
	OA/OC SURROGA	TE RECOVERIES	332
4	4-BROMOFLUOROBENZENE	(65-135%)	798
	F OHANTITATION LIMIT		RECEIVE DOOR

#### OA/OC SURROGATE RECOVERIES

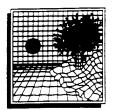
ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819.01P

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.01

DATE SUBMITTED: 02-22-92
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510
SAMPLE ID: MW9990-1

RESULTS REPORTED IN ug/1 OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCAREONS	DETECTION LIMIT	RESULTS
NAPHTHALENE	1.0	ND
ACENAPHTHYLENE	1.0	ND
ACENAPHTHENE	1.0	ND
FLUORENE	1.0	ND
PHENANTHRENE	1.0	ND
ANTHRACENE	1.0	ND
FLUORANTHENE	1.0	ND
PYRENE	1.0	ND
BENZO(A)ANTHRACENE	1.0	ND
CHRYSENE	1.0	ND
BENZO(B) FLUORANTHENE	1.0	ND
BENZO(K) FLUORANTHENE	1.0	ND
BENZO(A) PYRENE	1.0	ND
DIBENZO(A,H)ANTHRACENE/	1.0	ND
INDENO(1,2,3-CD)PYRENE **	1.0	ND
BENZO(G,H,I)PERYLENE	1.0	ND

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL p-TERPHENYL 102.0%

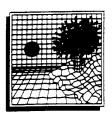
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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CLIENT: ENGINEERING SCIENCE, INC.

**REPORT:** 8819.02BX

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER

SWLO #: 8819.02

METHOD REFERENCE: EPA 602 DATE SAMPLED : 02-21-92 DATE SUBMITTED: 02-22-92 DATE ANALYZED: 02-25-92

PROJECT: AT 510

SAMPLE ID: UST-TB3 TRIP BLANK

PARAMETER	LIME	UNIT	RESULTS
	7		
GAS CHROMATOGRAPHY			
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	1.0	ug/L	ND
22			

#### OA/OC SURROGATE RECOVERIES

4-BROMOFLUOROBENZENE (65-135%)

90%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

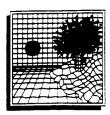
B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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#### ANALYTICAL REPORT

ENGINEERING-SCIENCE INC. 57 EXECUTIVE PARK SOUTH

ATLANTA, GA 30329

REPORT: 8819

REPORT DATE: 03/16/92

SWLO IDENTIFICATION

SAMPLE NO.:

8819.01-8819.02

DATE RECEIVED: 02/22/92

OA/QC

DESCRIPTION

PARAMETER

RESULTS

METHOD BLANK

03/04/92

LEAD

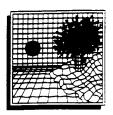
< 3.0 ug/L

BLANK SPIKE

03/04/92

LEAD

96% RECOVERY



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CLIENT: ENGINEERING SCIENCE, INC.

ATLANTA, GA

REPORT: 8819a

57 EXECUTIVE PARK SOUTH, SUITE 590

30329 DATE:

ATTN: OLA AWOSIKA

DATE: 03-20-92

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

DATE ANALYZED: 02-26-92 METHOD REFERENCE: EPA 601

PROJECT: AT 510 SAMPLE ID: BLANK

RESULTS REPORTED IN ug/L OR Parts Per Billion (PPB)

HALOGENATED VOLATILES

DET .. LIMIT

RESULTS

1,2-DICHLOROETHANE

1.0

ND

#### OA/OC SURROGATE RECOVERIES

CIS-1,2-DICHLOROETHENE (65%-135%) 107%

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819b

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO # 8819 (MS/MSD)
DATE ANALYZED : 02-26-92
METHOD REFERENCE: EPA 601

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

### HALOGENATED VOLATILES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

	SPIKE	Sample	MS CONC.	MS	AMT FOUND	PERCENT	
	come.	CONC.	MS CONC.	PERCENT	MSD CONC.	RECOVERY	PERCENT
COMPOUND	(ug/L)	(ug/La	(ug/L)	RECOVERY	(ug/L)	MSD	RPD .
1,2-DICHLOROETHANE	20.0	0	20.1	100.5	20.5	102.5	2.0



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819c

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
METHOD REFERENCE: EPA 602
DATE ANALYZED: 02-25-92

PROJECT: AT 510
SAMPLE ID: BLANK

	DET. Limit	UNIT	RESULTS
PARAMETER	LIMIL	<u> </u>	, , , , , , , , , , , , , , , , , , ,
GAS CHROMATOGRAPH	Y /	<b>&gt;</b>	
BENZENE	1.0	ug/L	ND
TOLUENE	1.0	ug/L	ND
ETHYLBENZENE	1.0	ug/L	ND
XYLENES	1.0	ug/L	ND
MTBE	10.0	ug/L	ND
	oa/oc_surrog/	ATE RECOVERIES	
	ANA ANA PARTER		

4-BROMOFLUOROBENZENE (65-135%)

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS ON ORIGINAL RUN AND RERUN.

SW = TEST METHODS FOR EVALUATING SOLID WASTE, EPA PUBLICATION #SW846, THIRD

EDITION, NOVEMBER 1986



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819d

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 02-25-92
SWLO #: 8819 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

#### BTEX MATRIX SPIKE/MATRIX SPIKE DUPLICATE

			MATRIX SPIR	Œ	
	SPIKE CONC. (ug/L)	Sample Comc. (ug/L)	CONC. (ug/L)	PERCENT RECOVERY	
BENZENE	10.0	0	9.8	98.4%	
TOLUENE	10.0	<b>Q</b> .//	9.0	89.5%	
ETHYLBENZENE	10.0	O O	9.3	93.3%	
TOTAL XYLENES	<i>3</i> 0.0	0	29.1	97.0%	
MTBE	30.0 40.0	0	36.0	90.0%	

	MATRIX SPIKE DUP NSD CONC. (ug/L)	PERCENT REC. (ug/L)	DIFFERENCE
BENZENE	10.6	106.3%	7.72%
TOLUENE	9.1	90.8%	1.43%
ETHYLBENZENE	9.4	93.9%	0.64%
TOTAL XYLENES	29.4	97 <b>.9</b> %	0.92%
MTBE	43.1	107.8%	18.0%
			~



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CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819e

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER SWLO #: METHOD BLANK

METHOD REFERENCE: EPA 504.1 DATE EXTRACTED: 02-24-92 DATE ANALYZED: 02-24-92

PROJECT: AT 510

RESULTS REPORTED IN ug/1 or PARTS PER BILLION

DET.

PARAMETER

LIMIT RESULT

ETHYLENE DIBROMIDE

ND

OA/OC SURROGATE RECOVERY

1,1,2,2-TETRACHLOROETHANE

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

EPA = #EPA600/4-79-020, MARCH 1985 SM = STANDARD METHOD, 16TH EDITION

B-87



1700 West Albany • Broken Arrow, Oklahoma 74012 • Office (918) 251-2858 • Fax (918) 251-2858

CLIENT: ENGINEERING SCIENCE, INC.

REPORT: 8819f

57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329

DATE: 03-20-92

ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92
METHOD REFERENCE: EPA 610

PROJECT: AT 510

SAMPLE ID: WBLK022892-01

RESULTS REPORTED IN ug/l OR Parts Per Billion (PPB)

POLYNUCLEAR AROMATIC HYDROCARBONS DETECTION LIMIT	RESULTS
NAPHTHALENE 1.0	ND
ACENAPHTHYLENE 1.0	ND
ACENAPHTHENE 1.0	ND
FLUORENE 1.0	ND
PHENANTHRENE 1.0	ND
ANTHRACENE 1.0	ND
FLUORANTHENE 1.0	ND
PYRENE 1.0	ND
BENZO(A)ANTHRACENE 1.0	ND
CHRYSENE 1.0	ND
BENZO(B) FLUORANTHENE 1.0	ND
BENZO(K) FLUORANTHENE 1.0	ND
BENZO(A) PYRENE 1.0	ND
DIBENZO(A, H) ANTHRACENE/ 1.0	ND
INDENO(1,2,3-CD)PYRENE ** 1.0	ND
BENZO(G,H,I)PERYLENE 1.0	ND

#### OA/OC SURROGATE RECOVERIES

2-FLUOROBIPHENYL

90.7%

p-TERPHENYL

78.6%

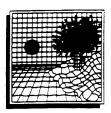
ND = NONE DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

** = THESE COMPOUNDS COELUTE (AS INDICATED IN METHOD 610).



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57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: 8819 (MS/MSD)
DATE EXTRACTED: 02-28-92
DATE ANALYZED: 03-06-92

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

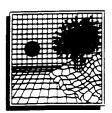
### WATER PAH MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

						2224M	
	SPIKE	AMT FOUND	AMT FOUND	ms	AMT FOUND	PERCENT	
	ADDED	SAMPLE	MS	PERCENT	MSD	RECOVERY	
COMPOUND	(ug/1)	(ug/1)	(ug/1)	RECOVERY	(ug/l)	MSD	RPD
NAPTHALENE	10.0	0	7 <b>.6</b>	76.2	10.6	106.2	33.0
ACENAPTHYLENE	10.0	. 0	7.9	79.0	10.8	108.0	30.9
ACENAPTHENE	10.0	0	7.9	78.8	10.8	107.9	31.1
FLUORENE	10.0	0	8.6	85.9	11.9	119.4	32.6
	10.0	0.6	8.6	86.4	12.1	121.2	33.6
PHENANTHRENE	10.0	o o	8.7	87.4	11.9	118.5	30.3
ANTHRACENE	T833:		8.4	84.1	11.5	115.4	31.4
FLUORANTHENE	10.0	2		84.2	11.7	117.4	32.9
PYRENE	10.0	U	8.4				
BENZO-(A)-ANTHRANCENE	10.0	····· 0	7.5	75.2	9.9	99.1	27.5
CHRYSENE	10.0	0	7.0	ز 70.1	9.3	93.4	28.5
BENZO-(B)-FLUORANTHENE	10.0	0	8.1	81.1	10.8	107.7	28.2
BENZO-(K)-FLUORANTHENE	10.0	0	8.4	84.2	11.3	113.2	29.4
BENZO-(A)-PYRENE	10.0	0	8.4	84.2	11.1	110.6	27.1
DIBENZO(A, H) ANTHRACENE/	20.0	0	8.3	41.3	11.7	58.5	34.5
INDENO(1,2,3-CD)PYREN						a**	1
BENZO(G,H,I)PERYLENE	10.0	0	8.4	83.9	12.0	119.5	35.1

OA/OC SURROGATE RECOVERIES

*VALUES OUTSIDE OF QC LIMITS

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REPORT: 8819h

57 EXECUTIVE PARK SOUTH, SUITE 590

DATE: 03-20-92

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
SWLO #: METHOD BLANK
DATE ANALYZED : 03-04-92
METHOD REFERENCE: EPA 418.1

PROJECT: AT 510

SAMPLE ID: WBLK03039201

RESULTS REPORTED IN mg/L OR Parts Per Billion (PPB)

PARAMETER

DET. LIMIT

RESULTS

TPH

0.5

ND

ND = NOT DETECTED ABOVE QUANTITATION LIMIT

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

BECH CO. C. C.



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57 EXECUTIVE PARK SOUTH, SUITE 590

ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 03-04-92
SWLO #: 8819 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

REPORT: 8819i

DATE: 03-20-92

TPH MATRIX SPIKE MATRIX SPIKE DUPLICATE

SPIKE CONC. SAMPLE CONC. CONC. PERCENT
(ug/L) (ug/L) (ug/L) RECOVERY

TPH 20.0 0 15.2 76.0%

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ATLANTA, GA 30329 ATTN: OLA AWOSIKA

SAMPLE MATRIX: WATER
DATE ANALYZED: 03-04-92
SWLO #: 8819 (MS/MSD)

PROJECT: AT 510

SAMPLE ID: CONFIDENTIAL ID

REPORT: 8819i

DATE: 03-20-92

### TPH MATRIX SPIKE/MATRIX SPIKE DUPLICATE

	SPIKE CONC. (ug/L)	SAMPLE CONC. (ug/L)	MATRIX SPIK CONC. (ug/L)	PERCENT RECOVERY	
ТРН	20.0	0	15.2	76.0%	
	мsD conc. (ug/1)*	MSD PERCENT RECOVERY		Y PERCENT FERENCE	
ТРН	16.0	80%	2	.5%	